WISDOM

THE MAGAZINE OF KNOWLEDGE FOR LIFETIME LEARNING AND EDUCATION

PHYSICAL EDUCATOR VIC TANNY

PUBLISHED BY
THE WISDOM SOCIETY

THE WISDOM OF PHYSICAL FITNESS
HOW TO AVOID A HEART ATTACK
HOW TO ATTAIN LONGER LIFE

Portrait by
Karsh of Ottawa

WISDOM

Ageless World of Infinite Variety

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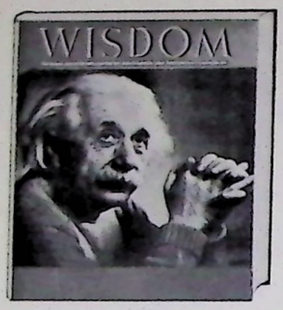

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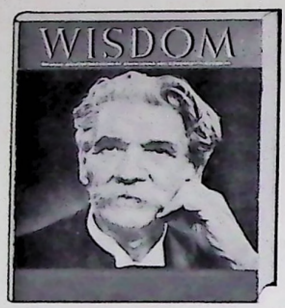

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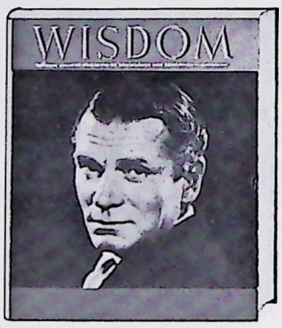

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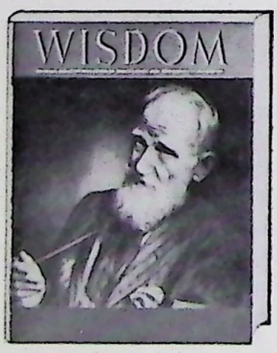

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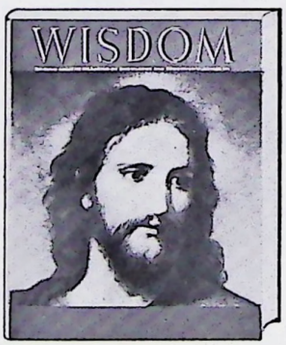

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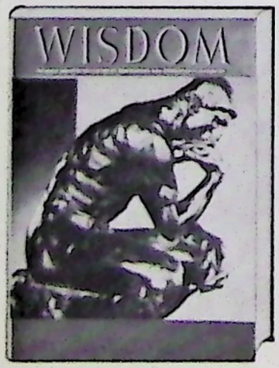

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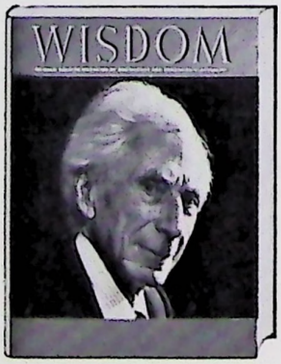

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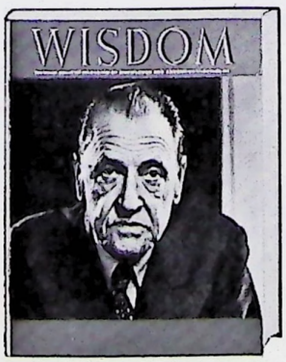

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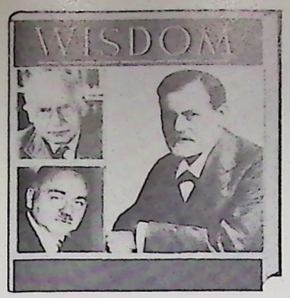

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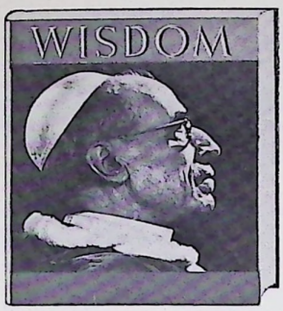

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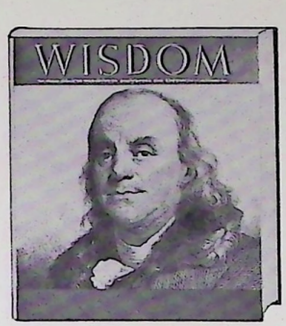

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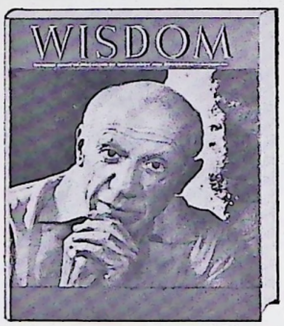

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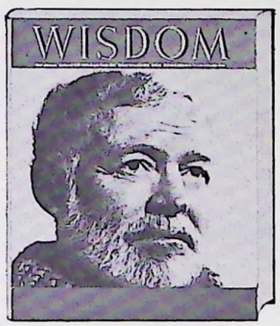

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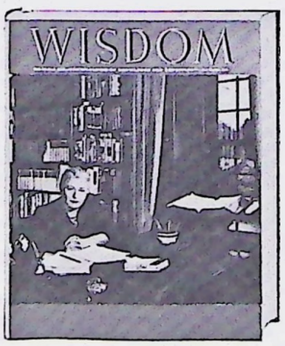

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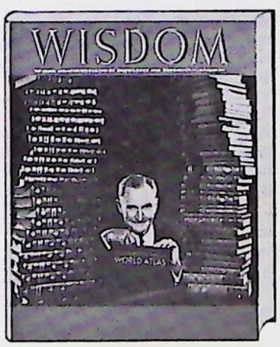

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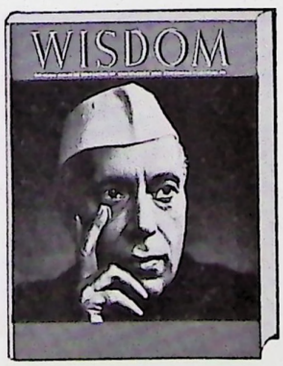

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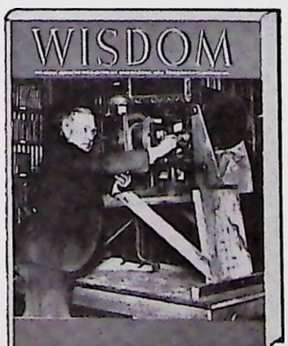

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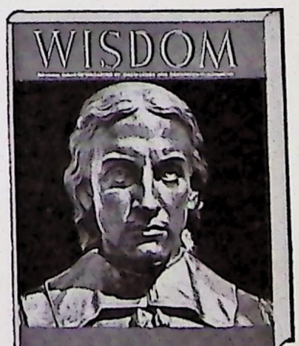

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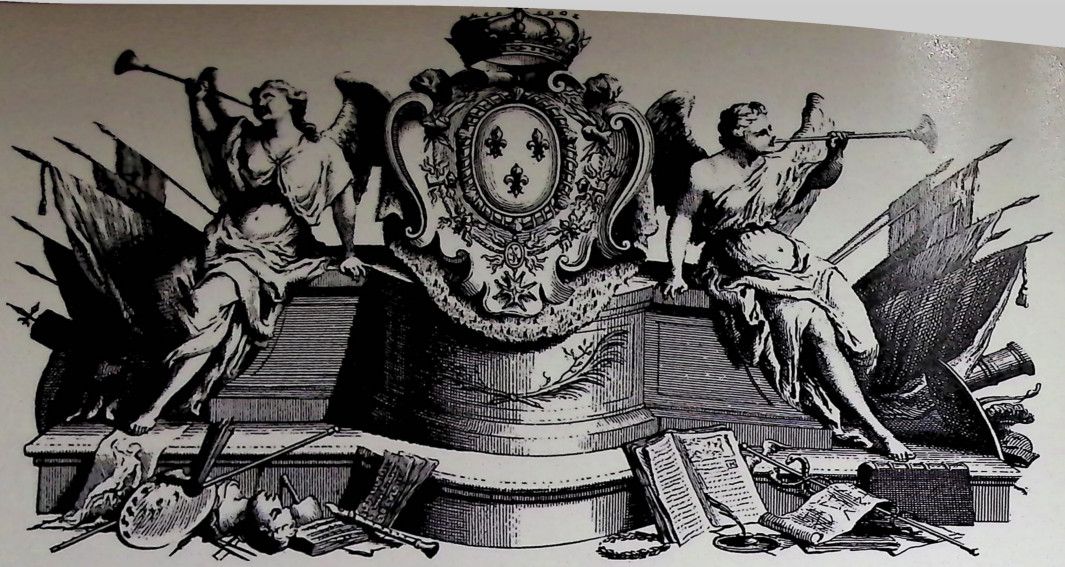

LEON GUTTERMAN
Editor and Publisher

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THE PRESIDENT OF THE U. S. ON PHYSICAL FITNESS

A HISTORY OF PHYSICAL EDUCATION

OUTDOOR WORLD OF PHYSICAL ACTIVITY

PHYSICAL FITNESS AND LONG LIFE

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May 1961

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A LETTER FROM THE PUBLISHER

LEON GUTTERMAN, EDITOR AND PUBLISHER

Good health and good intellect are the two greatest blessings of life. He who has health has hope and he who has hope has everything. The health of a people is the foundation upon which all their happiness and all their powers as a nation depend. The health of a nation is an almost unfailing index of its morals. A high standard of health is economically of incalculable value to a nation. America would be more prosperous if the health rate were higher.

Man has a deeply rooted admiration for physical fitness and strength. Then why is there so much depressed vitality in our country? Partly because men and women are easily led astray from health by ambitions so strong that they force them to ignore or disregard the associated deterioration of physical vigor. Everyone must agree that health is something to be enthusiastic over; and yet the nation's standard of health is, to say the least, below average. As to the economic value of healthfulness all are agreed. The loss to the output of the country through unnecessary illnesses is enormous and every hard working man knows how the state of his health affects what he can accomplish in a day. There is still an immense amount to be learned about health, but if what is at present known to a few were a part of the general public's knowledge, the average expectation of life could probably be increased by twenty years.

People should live longer. More men and women should be getting more out of life. Health is the most admirable manifestation of right living. It is a precious thing to preserve, for there are hundreds of diseases, but only one health. "To preserve health," said Samuel Johnson, the English literary genius, "is a moral and religious duty, for health is the basis of all social virtues. We no longer can be useful when not well. Health and vigor, and a happy constitution of the human body, are of absolute necessity to the enjoyment of the comforts, and to the performance of the duties of life, and requisite in yet a greater measure to the accomplishment of anything illustrious or distinguished."

Without health, life is not life; life is lifeless. Bad health and sub-health on the whole tend to shackle ideas, thoughts, hopes and aspirations. The ignorance of the American people in matters of health has reached tremendous proportions and has made easy the way for quacks, charlatans and fakirs, by clever advertising, to persuade the American public to spend more than one billion dollars a year for foods and drugs that have no real benefit. Medical truths have been falsified or distorted for commercial profit and a great amount of harm, misinformation and false guidance have resulted from the clever techniques of modern advertising. For example, the American Medical Association estimates that the sale of vitamins is needlessly costing the nation five hundred million dollars a year. Reducing remedies, cold remedies, pain and headache relievers, pep pills, sleeping pills and tranquilizers are being sold with great success by shrewd promoters.

Why? Because millions of men and women are living below their best level of physical fitness. Half the difficulties that men and women suffer arise from a morbid state of health. All are agreed as to the value of health. Yet, health is not valued until sickness comes. We lose our health and how everything is changed! Loss of health always means some loss of unity, some distractedness, a pain that keeps one from working, a headache that keeps one from thinking, an illness that keeps one from enjoying – a little blot in the brain that shuts out the sun. The irritability caused by heart disease, hypertension and fatigue breaks up families and friends. Doctors agree that most of the causes of dying before one's time are avoidable. It is open to almost all of us to determine what we are not to die of and it is open to many to determine what kind of old age will be theirs.

Man is a very restless organism and the tax is illness. Man's restlessness is due to his ambitions, often strong enough to make him quite careless of health. Who would live long must cultivate a tough body. Don't expect to have health without effort; nothing in this world worth anything can be had without paying for it and health is the prize of constant struggle.

The body has its claims. It is a good servant. Treat it well and it will do your work. Attend to its wants and requirements, listen kindly and patiently to its hints, occasionally forestall its necessities by a little indulgence and your consideration will be repaid with interest. Give the body obedience and it will return happiness and health. Give overdrafts and excesses and it will return sleepless nights and suffering days. Push it around, mistreat it, ignore it and suffocate it, make it a slave instead of a servant and it may not complain much, but like the weary camel in the desert, it will lie down and die. Man's sins are seeds, his sufferings harvests. Every action is embryonic and, according to whether it is right or wrong, will ripen into sweet fruits of happiness and pleasure or poisonous fruits of sorrow and pain. If we continue borrowing for work the hours that we owe to physical exercise and sleep, though we may postpone a settlement for years, the final and inevitable result will be physical and mental bankruptcy.

Thanks to the noble efforts of such outstanding and dynamic leaders as President John F. Kennedy, Physical Educator Vic Tanny and Heart Specialist Dr. Paul Dudley White, Americans are finally waking up to the importance of physical fitness and asking how it may best be secured. Just as peace means much more than the absence of war, so health means much more than the absence of disease. For health is a positive quality, implying harmony of physical and mental function, poise and balance, vigor and quiet joy. It means that the whole organism – the body and mind – is working as a single unit. The healthy person has a wholeness or oneness of physical life, while the unhealthy person is always distracted, always facing bodily discord and intellectual difficulties, for he is not at peace with his own body. Bodily health brings its own reward – the thrill of vigor, the light step, the enjoyment of endurance, the readiness for adventure; but it also brings a higher happiness of a clear head, pleasant feelings and the capacity for enjoying the good things of life. Good health means a certain balance of life, both mental and physical, and also a certain vitality or intensity. With these two qualities goes a power of resistance to various forms of assault – especially disease.

We cannot separate the healthy mind from the healthy body. The mind can be depressed or invigorated by the body. The body influences the mind and is influenced by it. Health of the body is as important to our happiness as health of the mind, although both are deserving of much more attention than either receives. It is quite true that a restless mind or the spur of ambition or devotion to a good cause may lead to overwork and its unhealthy consequences. But everyone knows that a man's first duty is to keep healthy. The rewards of leadership go to those who excel in vigor and vitality. There have been cases where a very healthy mind was tenant of a weakly or diseased body, but the rule is that bodily health works towards mental health.

Look to your health! And if you have it, thank God. For health is the greatest of all possessions, the greatest blessing that we mortals are capable of receiving – a blessing that money cannot buy. It is the blessing of the rich and the riches of the poor. There is no wealth like health because wealth can buy no health. Yet, it is through health that money is procured. Everyone will admit that wealth without health is a mockery. Better to have a poor man's health than a rich man's disease. Money brings nothing to a worn-out man. The healthy laborer is better off than a sick millionaire. Health is above all money and the strong body is infinite wealth. Is there any enjoying this beautiful world without it? There is, however, this difference between those two temporal blessings – health and money: money is the most envied, but the least enjoyed; health is the most enjoyed, but the least envied – and this superiority of the latter is still more obvious when we reflect that the poorest man would not part with his health for money, but that the richest would gladly part with all their money for health.

Thus, happiness lies, first of all, in health – blessed health! You have no right to neglect your health and thus become a burden to yourself and to others. Without health life is not life; it is only a state of languor and suffering. For life is not merely to be alive, but to be well! The building of a perfect body, crowned by a perfect brain, is the grandest hope of our civilization. Youth will never live to age unless they keep themselves in health with exercise and in heart with joyfulness. Health is more than halfway to happiness, for the health of the body makes for the health of the mind. Health makes for cheerfulness and the only sure path to a serene and tranquil life is through health. It is easier to be wise, successful, happy and of good will if one is in good health. And it is the characteristic of healthfulness to wish to be healthier! "A sound mind in a sound body," wrote the English Philosopher John Locke, "is a short but full description of a happy state in this world. He that has these two, has little more to wish for; and he that wants either of them, will be little the better for anything else."

Wealth without health is mockery and so is health without wisdom. There is no joy even in beautiful wisdom unless one has precious health. Our prayers should always be for a good mind and a healthy body. No man is in true health who cannot stand in the free air of heaven with his feet on God's good earth and thank his Creator for the precious luxury of physical existence!

Leon Gutterman

VIC TANNY

America's Greatest Physical Educator

ON HIS 25TH ANNIVERSARY OF RECORD-BREAKING, OUTSTANDING ACHIEVEMENT IN PHYSICAL EDUCATION, WISDOM PAYS TRIBUTE TO AMERICA'S MOST FAMOUS PHYSICAL EDUCATOR AND GREATEST CRUSADER FOR BETTER HEALTH AND A MORE PHYSICALLY FIT NATION

In an age when security has become the watchword, when ease of living has become the status emblem of distinction, there looms on the scene a virile symbol of the American story—Vic Tanny, who emphatically brings home to the youth of America the realization that this is still the land of golden opportunity for those possessing vision, courage, ambition, energy, abundant good health and faith in themselves and in their great American heritage.

At a time in our history when, as a nation, we have become soft to a point that even our national leaders are alarmed and the President of the United States has called for immediate action to alert us to the necessity for physical fitness if we are to maintain our role of world leadership, Vic Tanny is doing more than any other private citizen to make every American health and exercise conscious. The beautifully appointed Tanny Recreation Centers, stretching the length and breadth of the land, invite his countrymen everywhere to come and join in the exciting and rewarding fun of becoming physically fit under the watchful eyes of the highly trained Tanny instructors.

Tanny, a man possessing rare qualities which are seldom associated with the athletic type, is a highly sensitive, aesthetic, intuitive, serene individual whose low, gentle voice and quiet manner demand immediate attention and respect from all who meet him. He is dedicated to the premise that man is truly created in the image of God and that man owes it to his Creator to look the part. An indefatigable worker, he is not one who subscribes to the belief that the world, his government, or anyone else owes him a living. From years of experience he has found what everyone must sooner or later discover: you have to work hard for anything worthwhile that you wrest from life. Like all successful men, he has been criticized, but he has calmly and majestically risen above his critics, going peacefully and energetically about his business of opening luxurious Tanny Gyms and becoming more and more successful with each passing day. He feels secure in his accomplishments, motives and the success of his growing enterprises. He stands on his twenty-five year record of achievement.

To meet Vic Tanny is a startling experience, for one must immediately revise his concept of a physical educator. Here is no brusque, swaggering figure, smug in the knowledge of his athletic prowess, but a man of gentle refinement. When he speaks, the mellow timbre of his voice falls like a musical cadence on the ear; when he moves, it is with the restrained grace and power of a panther; when he greets you, it is with all the courtliness and elegance of a polished gentleman. His knowledge of the world around him seems boundless. When he speaks of his work, his gyms, his ideas and plans for the future, his enthusiasm seems to light up his entire being, radiating from him and scintillating about him, sparking the same zeal and inspiration in those around him, who, listening, are immediately caught up in the scope and magnitude of his imagery!

While his success has been phenomenal, Tanny is keenly conscious of the responsibilities which fame and fortune have brought him. He is cooperating with our national leaders by lending to their physical fitness crusade the wisdom gleaned from years of research and labor in the realm of physical education, which he is now incorporating into a comprehensive work, *The Vic Tanny Encyclopedia of Health*. He is, above all, a man of action who knows what he wants to accomplish and how to accomplish it. A keen judge of human nature, he has, with the eye of a Caesar, selected his executives for qualities of loyalty, intelligence and leadership. The unwavering fidelity and devotion of his employees is eloquent proof of his magnetic personality and sense of justice and fair play.

Tanny applies himself to the gigantic task of administering his far-flung enterprises and of creating new and even better ideas for improving the physical well-being of all who seek the benefits of the Tanny program of planned exercise. A man of acute perception, ideas come to him in intuitive flashes. He has learned to recognize and use this gift to a degree bordering on the supernatural. When his mind receives these intuitive thoughts he snatches the nearest telephone—Tanny is always surrounded by telephones—and immediately puts his ideas into action before they are lost forever in that strange sea of the subconscious.

An ardent exponent of his own theory of the benefits to be gained from a consistent pattern of exercise, Tanny follows the schedule of conditioning he sets for others with precise regularity. No matter what exigencies arise, or what urgent business matters demand his attention, Tanny exercises three times a week—and oftener if business pressures mount. In fact, it is when tensions and pressures accumulate that he finds a brisk forty-five minute daily session in the gym the most beneficial. There is nothing, he claims, that will banish worries, pressures and problems quicker, leaving the body refreshed and mind alert to handle difficulties sensibly, than an invigorating physical workout. This devotion to his own theories and practices is reflected by his entire family and throughout the Tanny organization.

Tanny is a happily married man, father of four robust, active, healthy children—three girls and a boy—who have been schooled since infancy in the Tanny doctrine of regular exercise. All Tanny employees, from the top executives on down, follow his formula of regular physical workouts. Perhaps his most devoted admirer is his mother, Angela Tanny, who—now past seventy—works out faithfully at the Santa Monica, California gym. Under his careful supervision and loving care, she maintains a figure of youth and firmness that is the envy of women one-third her age. With boundless energy and vitality, she reflects the priceless rewards that accrue, even with age, to those who practice the wisdom of sensible habits of exercise and health.

A man who holds in deep reverence the pioneer spirit that produced this great nation, Vic Tanny is appalled at the slough of indolence, indifference and ease into which the average American has permitted himself to slide. The sons and daughters of the pioneers—ensconced in front of their television sets, driving to and from work in luxurious automobiles, eating rich, exotic, highly-spiced food, consuming huge quantities of liquor, living on the fruits of the blood, sweat and labor of their ancestors—seem scarcely conscious of their fellow men, who are dropping like flies around them from heart failure. They appear unaware that overindulgence in the good things they have created, combined with lack of physical activity, brings on a poisonous, degenerative process which is attacking the moral fiber of their country.

But Tanny knows and has met the challenge with his typical wisdom and action. He does not rail senselessly against this hedonistic trend of the populace—he competes with it! With the wizardry of a Merlin he has conjured up his recreational fairylands and, like the legendary Pied Piper of Hamelin, has played his magic tune—luring millions of Americans away from their television sets, away from their unsound eating and drinking habits, back to the use of their legs, their muscles, their entire bodies! Tanny is in love with America, with the ideals and principles that have produced the greatest republic on earth. He wants it to remain a sound, powerful, vibrant nation. If he has his way, and it looks as though he will, there will be no ugly Americans anywhere—only handsome, lithesome god-like ones!

Born on February 18, 1912, in Rochester, New York, Vic Tanny was brought up in an atmosphere of industriousness and health. While his

father labored diligently in his tailor shop, his mother busied herself with rearing the healthiest, handsomest children in her neighborhood. She was extremely interested in nutrition and fed her family with great care – with emphasis on whole wheat bread, plenty of vegetables and careful avoidance of sugars, starches and desserts.

All the Tanny children were required to work and Vic started peddling papers before he had entered grammar school. Even at this early age, he showed unmistakable signs of business acumen and leadership. When circulation contests were held, Vic would buy up papers and distribute them free of charge to non-subscribers on his route. Soon they got the habit of receiving a paper and became loyal Tanny customers, enabling him to win the contests with ease.

When the time came for his schooling to begin, Vic was sent off to the Rochester Holy Rosary Catholic grammar school where, under the tutelage of the strict but gentle nuns, he proved to be a quick and eager student. Continuing on to Rochester's John Marshall High School, he became an avid participant in all sports offered by the school curriculum. He played baseball, basketball and football, boxed, swam and finished first in a strength test conducted by the coaches. When a meeting was held by the athletic department to decide which student had the ideal athletic build, Vic Tanny was unanimously selected for the honor. Not satisfied to rest on his laurels, Tanny, who weighed about one hundred sixty pounds, hied himself off to a Rochester gym which was owned and operated by Arthur F. Gay, a man who had gained renown in the area for keeping paunches off tired businessmen. Applying himself with the dedication of a fanatic, Tanny, under the watchful and expert eye of Gay, developed into a veritable Hercules and rewarded the enthusiasm and patience of his instructor by winning the New York State weight-lifting championship.

Training with Gay for four or five years, Tanny absorbed everything that Gay could teach him and made himself so indispensable to the older man that he soon became a part-time assistant, after school hours. It was during these years with Gay that Vic Tanny's idea of owning a chain of gyms – with appointments that would be beautiful as well as useful – was first conceived. Although Gay maintained excellent gym facilities, Tanny was repulsed by the dark, cheerless, ill-smelling atmosphere of other gyms of that day. He vowed that some day he would own a gym that possessed such beauty of decor, such excellence of equipment, that exercise would be looked upon by all who came to it as a delightful and rewarding recreational activity.

Upon finishing high school, Tanny was faced with the problem of selecting an institution of higher learning in which to complete his schooling. With typical Tanny foresight he sensed the value of a well-rounded education and selected Brockport State Teachers College in Brockport, New York. Receiving his degree, Bachelor of Education, Tanny secured a position as history and social studies instructor at the Thomas A. Edison School in Gates Township, just outside of Rochester. Here he taught seventh, eighth and ninth grades, found time to coach the baseball and basketball teams after school and opened his first modest gymnasium, which he operated on a part-time basis.

In 1938 Vic Tanny went to California to take a post-graduate course at the University of Southern California. The glamour and proximity of Hollywood, the casual California mode of life, the attention to youth and beauty that seemed to be an integral part of the California character, made a deep impression on him. Here were people conscious of the value of physical beauty and well-being; here was the ideal environment in which to bring forth his treasured brain child – the beautiful and luxurious Tanny Gym!

In June, 1940, California – that golden Lorelei of the West Coast – had her way with Vic Tanny and he answered her siren call. Disposing of his gym in Rochester, he arrived in Santa Monica with $431 in his pocket. It did not take long for this small sum to be exhausted and Tanny soon found himself with no capital, no assets and only his cherished dream intact. Undaunted by his predicament, he sought out the manager of a local bank. Whatever there is about an individual – a spirit of integrity, an aura of success apparent even in adversity – that makes an astute banker willing to take a chance on him, Tanny apparently had it. He was advanced the sum of $200 on his signature and with it was able to complete the opening of his gym.

He built partitions, painted, sanded and varnished floors and installed equipment – a work of love – the beginning of reality for a long-cherished and carefully-nurtured dream. In August, 1940, he opened his first Tanny Health Center in California. His hard work and earnest toil were handsomely rewarded by the enthusiasm with which Santa Monica responded to his enterprise.

During the war years and for several years following the war, Vic Tanny worked with the United States Air Force, conditioning personnel and developing theories, as well as practical methods of keeping Uncle Sam's flyers in peak form. For this work, he was rewarded with a Citation from the Air Force for his successful efforts in their behalf. Today, Tanny's equipment as well as his health and exercise program is an integral part of more than half a dozen Air Force bases.

In 1949 Tanny opened a gym in Long Beach, California. The Long Beach citizens, responding with the same eager enthusiasm the Santa Monicans had shown, lost no time in discovering the advantages of health and exercise as offered by the Tanny program and made his Long Beach Recreation Center an immediate and continuing success. The Long Beach and Santa Monica gyms are still the most thriving of all the Tanny locations. It was from Long Beach that Vic Tanny's cherished dream blossomed forth into full reality and spread throughout California and across the nation.

Vic Tanny, who has devoted his life to the care and development of the human body, believes that the body should be exalted and that a wide and intelligent interest in physical education should be awakened in the mind of the public. It is the duty of parents, he feels, to set good examples of health and exercise for their children. It is important that families enjoy exercise together, creating for themselves and each other a road to robust health, physical beauty and muscular strength.

Tanny's wealth of knowledge about the human body gives one the clue to why he is America's leading physical educator. He is a firm adherent of the Greek theory of a sound mind in a sound body and believes that the Tanny program of Progressive Physical Conditioning is the only path to this goal. Tanny knows and understands the treasured, secret image that each person carries of himself and he has made this secret ideal a reality for millions of people.

He views with deep concern the tendency of sedentary workers to allow their productive powers to be unnecessarily dissipated due to the lack of a sensible program of physical exercise. He claims that reliance on pep pills, tranquilizers and sleeping pills by people engaged in sedentary endeavors has reduced their productivity to less than one third of their potential capacity – cheating them and their country of the full benefit of their abilities and talents. In addition, they allow themselves to become overweight and flabby, which places an increased strain on the heart; their lungs, brain and other vital organs are poorly nourished due to sluggish circulation and their bodies are poisoned by the retention of accumulated waste materials. All of these conditions could be avoided by simply adhering to the practical rules of health in conjunction with a planned program of regular physical exercise.

Many people are prone to believe that dieting alone is a solution to weight problems. This is a fallacy that should be corrected, Tanny believes, for dieting alone will not strengthen muscles – only exercise and constant use of the muscles can accomplish this. Especially is this true of the abdominal muscles, perhaps the most difficult of all muscles to strengthen and subdue. Dieting may remove the excess weight, but if the muscles remain in a flabby, atrophied state, little beauty is added to the figure.

Vic Tanny is amazed at the enormous amount of money spent by people over thirty-five in attempting to reverse the aging process through the use of cosmetics and other artificial means. He eloquently points out that beauty is merely good health and that health is beauty. There has been nothing conceived in any chemical laboratory – nothing placed on the market for use by the public – which can undo or hide the neglect of the human body. There is no cosmetic, no foundation garment, that can camouflage the physical deterioration which becomes apparent in dull, lifeless, brittle hair, lusterless eyes, pale skin and a body which, having lost its firmness and contour, becomes flabby to such a degree that it finally resembles an indistinct blob of protoplasm– with arms and legs!

If lack of exercise so affects a person on the outside, what happens to the vital organs on the inside? Tanny explains that people should keep in mind statistics which show that sedentary workers who fail to exercise have, by the time they reach the age of thirty-six, lost sixty per cent of blood circulation – circulation needed to stimulate and nourish the vital organs! Furthermore, he declares, unless the body is exercised regularly, this aging process sets in – even in youth – and particularly after the age of twenty-five years. First the body loses firmness, then shape, then strength, endurance and flexibility – until, in the final stage of degeneration, it reaches feebleness and ultimately death!

Although the human body degenerates from lack of physical exercise, it can – by scientific progressive physical conditioning such as that used

in the Tanny Method — be made to regenerate, counteracting and reversing the atrophy which has set in. The human body is the only machine that breaks down from lack of use and the only mechanism that functions better with increased use. In the final analysis, according to Tanny, a planned program of regular, supervised exercise is the best investment anyone can make — far more to be desired than paying doctor bills when neglect takes its toll, or paying for a premature funeral!

Exercise for men and women between the ages of forty-five and fifty-five, when people are at the peak of their attainments, is especially important. This is a time when everyone should take stock of health assets and establish a program to counteract the effects of the aging process. If a sensible three-day-a-week exercise program, such as the Tanny Gyms provide, is set up at this time of life, Tanny feels certain that the years that follow can be filled with a rewarding sense of physical well-being and continued productivity far beyond the age of sixty-five.

Tanny avows, with all the ardor and fervor of which he is so fluently capable, that exercising by his program will make everyone feel his best, do his best and look his best! Because he has personalized his methods to meet the individual needs of each man and woman, he feels certain that everyone enrolling in a Tanny Gym will look forward with eagerness and anticipation to every exciting visit. Women trim inches from the waist, hips and thighs, raise and firm the bustline and are re-proportioned until they have the youthful, trim, firm and appealing figures about which they have always dreamed. Men add inches to their shoulders, chest and arms, trim and harden the mid-section and, by the Tanny Method, develop the kind of physique that commands respect and admiration! In addition to improving the figure, there is added the satisfying knowledge that, as human beings, they are guarding and caring for their most prized possession — their bodies.

To say that Vic Tanny has revolutionized the gymnasium is a gross understatement, for he has really created an entirely new system of exercise for physical fitness. Gone is the gloomy, dark, dingy, depressing gymnasium of the past with its smell of sweat and its unsightly, grotesque-looking equipment! In its place, he has erected a palace wherein each man is a ruler, dedicated to the task of governing and beautifying the temple which houses the human spirit.

Entering a Tanny Health Center is like walking into a glittering wonderland. Underfoot, one feels the deep, soft pile of the rich red carpets; subdued, indirect lights cast a warm, rosy glow all about and the strains of muted music fall lightly and soothingly on the ear. In these relaxed, exquisite surroundings, people of all age groups are busily engaged in acquiring better figures and more abundant, vibrant health. A Tanny Gym is always a beehive of activity! The sparkling swimming pools, with exotic South Sea murals decorating the walls on every side, the inviting lounge chairs and umbrellas on the pool decks, give one the impression of being in an exclusive country club. Even the steam, massage and sun rooms have been glamorized with soft music and soothing color schemes carefully designed to relax tired bodies.

At several key locations, Vic Tanny has incorporated additional body-building attractions, such as bowling alleys with automatic pin setters and ice skating rinks in Tyrolean settings, featuring built-in Swiss chalets, flower boxes, fireplaces and — pink ice! For the convenience of members who wish to have friends and relatives wait for them while they work out, a cinemascope movie theatre is often provided and, in one Tanny Health Center located in the famous Miracle Mile strip on Wilshire Boulevard in Los Angeles, he has recently inaugurated dancing classes for ballet and numerous other types of dances.

As a firm believer in exercise, Vic Tanny is strongly in favor of any sensible physical fitness program, whether it takes place in the home, in the gymnasium, in the open air, or is a combination of all three. Many families find that establishing their own exercise program at home for the entire family is both fun and healthful, but most prefer the social atmosphere of the Tanny Gyms with such fabulous exercise machines as the specially designed bust-contouring machine, a variety of weight resistance equipment and superlative instructors who teach and supervise exercises which are specifically designed to meet the needs of each individual. These instructors, especially selected and trained in the Tanny Method, give each member a sense of assurance and confidence that he or she is receiving expert and scientific direction in solving weight, diet and body contour problems. For these reasons, Vic Tanny feels that his program of exercise encourages the discipline necessary for success, while the underlying psychology of working out with others keeps interest high.

It has been definitely proven that exercise improves a person's entire personality while lack of exercise distorts it and shortchanges his enjoyment of life. People from all walks and stations of life are Tanny customers. They are doctors, lawyers, merchants, housewives — even movie stars! In his twenty-five years as a physical educator, over a million men and women have taken advantage of Tanny's fountain of youth gymnasiums and benefited tremendously from his unique program of progressive physical conditioning.

Vic Tanny is convinced that unhealthy or unattractive people are unhappy people and that good health and appearance belong to those who strive for it. He advocates for everyone the wisdom of forming the exercise habit. Once it gets to be a habit and men and women realize the golden returns to be had in glowing good health and affluent energy, he states that it will remain a habit that will be an integral part of their lives and from which they will never deviate. He gives them beautiful surroundings, expert guidance, the best equipment and luxurious facilities — but in the end, each person must do the job for himself.

Today there are over one hundred Tanny Recreation Centers, each representing the epitome of luxury, method and equipment — and this is only the beginning! Tanny plans to expand into every major metropolitan area in the world. His ultimate goal is one thousand Tanny Health Centers, located in three hundred key cities.

Letters from the four corners of the earth, averaging over five hundred a week, constantly deluge Tanny, begging him to bring his program to other countries. He is making plans and looking forward to the day he will do this. When he does, Tanny will prove the most beloved and admired ambassador of good will that this country ever had!

On July 21, 1959, at the Waldorf-Astoria Hotel in New York City, Vic Tanny, businessman extraordinary, was presented with the American Success Story Award by The Free Enterprise Association. Today, 1961, Vic Tanny, citizen extraordinary, sounds a clarion call — along with President Kennedy, Dr. Paul Dudley White and other national leaders, physical educators and medical men — for America to awaken from its slumber of ease and complacency; to rally its forces against the barbaric elements that threaten our civilization because we have allowed ourselves to become soft, apathetic and indifferent; to wage war against that number one killer, heart disease, which reaps a harvest of lives from our indolence; to recapture the vigor of our fathers and grandfathers; to know again the singing joy of good health, firm muscles and a refreshed, clear mind; to resurrect and revitalize the spirit that made us a lusty, rugged, powerful and fearless nation under God! In this age, when security has become the watchword of our nation, men like Vic Tanny stand like beacons, beckoning us back to the American way of life and, by their example, inspire us to hold fast to our dreams, to work hard, to persevere, to avoid the easy way!

It has been a long road leading from that dingy, cheerless gym in Rochester, New York, where Tanny dreamed his boyhood dreams of owning his own gym, to the youthful, vibrant man of thought and action, whose Recreation Centers are a delightful kaleidoscope of light and color with sparkling swimming pools, gleaming equipment, glittering skating rinks and laughing, joyful people exercising together. But should you look more searchingly into those deep-set grey eyes, you would see the spirit of the boy still there looking out at the world — still dreaming his dreams of even greater and more wonderful accomplishments — of beautiful health palaces which he will build, spreading them throughout the entire world for the betterment of all mankind; for the benefit of men and women in every corner of the earth who need to be roused and awakened to the wondrous knowledge that the house of the human spirit must be cared for, exercised and revered so that the divine spark called "life" can burn high and joyfully within it!

Vic Tanny has great physical strength and enjoys remarkably good health. He is a man with a wonderful capacity for work, has a brilliant intellect and is dedicated to rendering great service to his country through physical education. He is one of the greatest examples of virility that our nation has produced. In his youth and early manhood, he repeatedly performed various tasks showing fine quality of muscle, wonderful endurance, great energy, high courage and strong will power. By keeping himself in condition, Tanny is able to meet tremendous demands upon his time and strength and, by the power of his energy, meets difficulties and solves problems which would knock out a weaker man. In various capacities, Vic Tanny has rendered to the nation services of inestimable value. Other examples of men of dynamic prowess, vision and leadership might be cited — men who have not only excelled in physical education, but have achieved success in the work of the world because they have kept themselves physically as well as mentally fit. Progress towards a higher civilization depends upon men of this courage and unique character. ♦

VIC TANNY'S WONDERFU

VIC TANNY has wrought more changes in the concept of the gymnasium in twenty-five years than all the physical educators of the preceding two thousand years combined! Until a few years ago, gyms were generally located in basements or tucked away upstairs somewhere on side streets – often dank and cold in winter and steamy in summer, exclusively the province of men and equipped with battered apparatus that had seen few changes through the years. Its reputation was seldom what might be called savory and it was frequently considered to be the social habitat of roughnecks.

The Vic Tanny Gyms are located in choice business sections, where huge glass fronts permit passing pedestrians and motorists a full view of members, representing virtually a cross section of the American people – men, women and children – frolicking happily in the pool or zipping around the ice rink. For the Tanny Gym is designed to embrace not only fitness and health, but fun and luxury – and at prices that make the fabulous facilities available to everyone.

The gym decorations are all designed by Vic Tanny: panoramas of color, with pink and charcoal predominating; modernistic murals and elongated El Greco-like figures which cavort on the walls, infinitely multiplied in the many mirrors. Customers wade ankle-deep through rich, red carpets, exercise on white and gold naugahyde benches and pose self-admiringly before giant, tinted mirrors, swaying and undulating their way to captivating contours, to the beat of softly muted mood music.

WORLD of PHYSICAL FITNESS

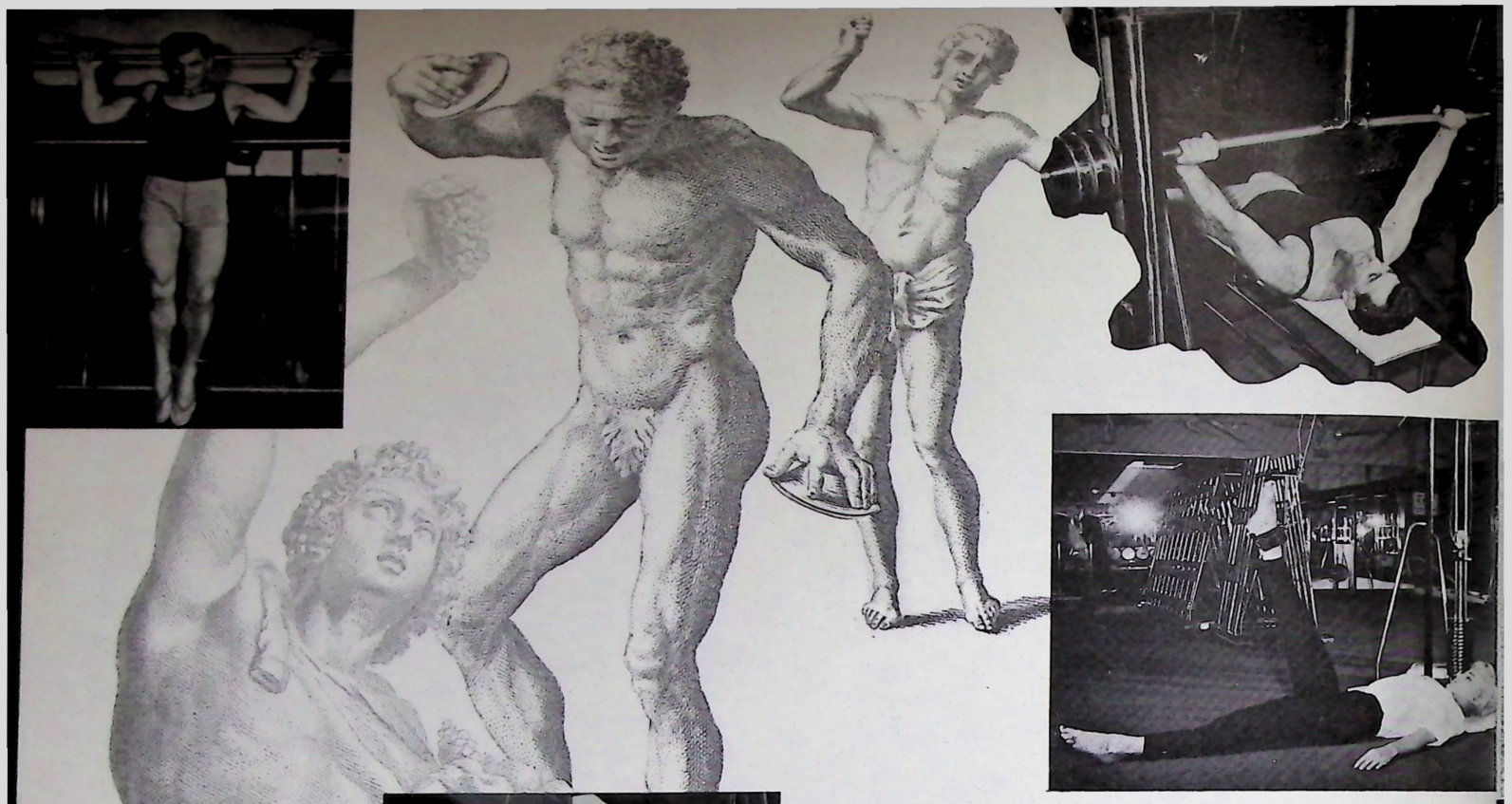
The finest in health facilities and equipment, including steam rooms, sun rooms and dressing rooms, are maintained in spotless condition. When Vic Tanny was unable to find exercise machines to produce the specific results he had in mind, he either invented them or revised the existing models to meet his needs. Each piece of gym equipment — such as the elbow resistance machine, incline bench, decline bench, thigh curl machine and leg press machine — is a specific device created for the purpose of achieving a definite result from the exercise for which it is used. This exercise equipment is all designed, tested and manufactured under Vic Tanny's supervision and the Tanny Gyms are the only gyms in the world featuring these contouring machines for every part of the human body.

Recreation goes hand in hand with scientific body contouring at all Vic Tanny Gyms, where everything is free to members. In colorful modern settings, pin setters keep bowlers' games rolling. Ice skating is a year-round feature and instructors are on hand with encouragement and helpful advice for beginners and advanced skaters alike. There are even movie theatres to provide additional diversion and recreation for members and their guests.

Luxuriously appointed, year-round indoor swimming pools are an ever-popular Tanny feature. The handsome tropical motif of the pool areas is reminiscent of that found at the finest resort hotels and the hygienically pure water is always kept at an even temperature by climatic control devices. Lifeguards are continually in attendance, maintaining a watchful eye over the guests and offering expert instruction to those who desire it.

Although the Vic Tanny Health Centers are the inspiration of one man, the organization is far from being a one-man venture. More than a thousand carefully selected and trained men and women direct the activities of the far-flung enterprise. There are four Tanny employee training schools — in New York, Chicago, San Francisco and Beverly Hills — which operate on a full-time, year-round basis. The training of the men and women who will become managers and instructors is intensive, professional and thorough. The schools provide courses in kinesiology, the study of muscular movements, simple dietary routines and, of course, the value and practical application of progressive resistance exercise on special Vic Tanny equipment.

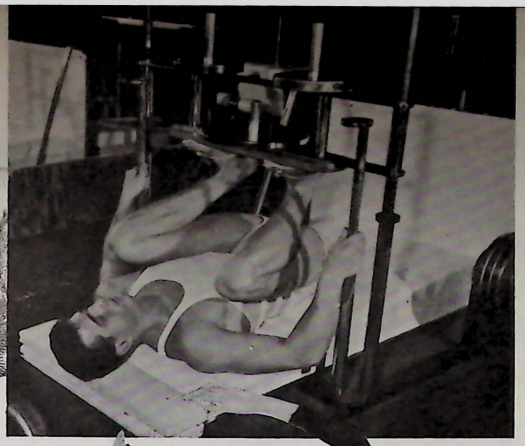
Many of the top Tanny executives were first gym members, then instructors and managers on their way to their present top positions. There is one supervisor responsible for every three gyms, charged with seeing that all facilities are properly maintained, that installations are spotless and that all personnel are conforming to the Vic Tanny standard in every phase of operation. And that is the secret of the Tanny success, which has built over one hundred gyms in twenty-five years — attention to detail in every facet of the lively, growing organization. Obtaining and utilizing only the best for each gym in location, equipment, decor and personnel and maintaining top standards in every respect, have earned the Vic Tanny Gyms the primary and, indeed, unique place in the field of recreation and health centers. ♦

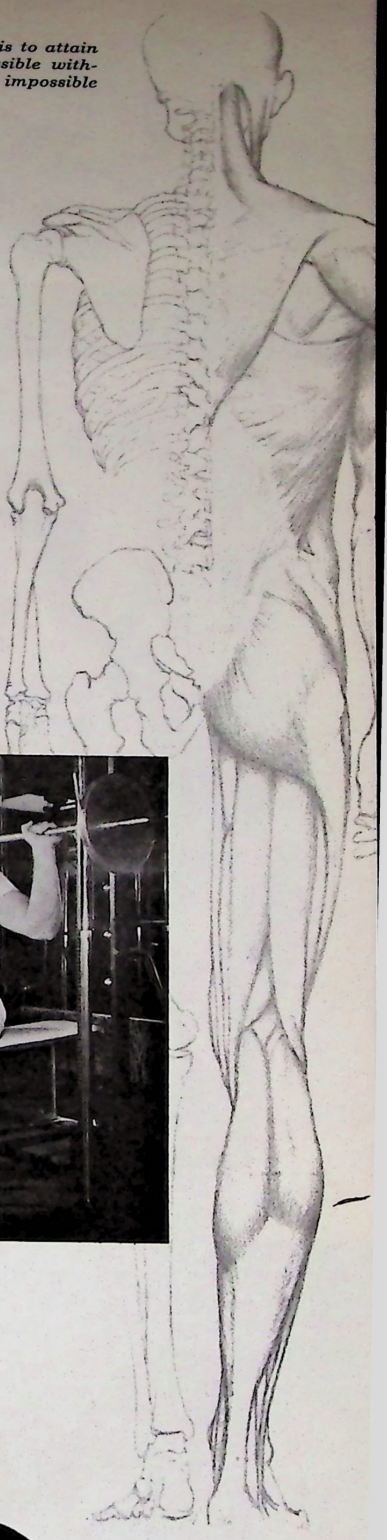


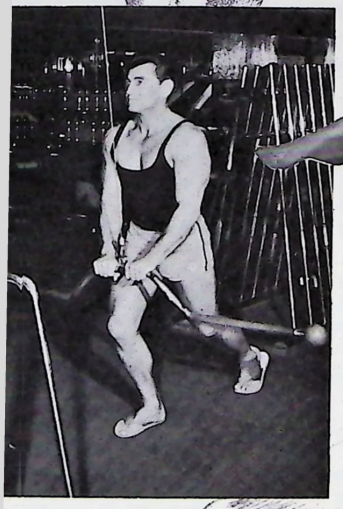
Anne Benton (below), talented young 20th Century-Fox Films actress, believes that a youthful appearance and a glamorous figure, priceless assets for every woman, can be obtained and preserved only with regular exercise.

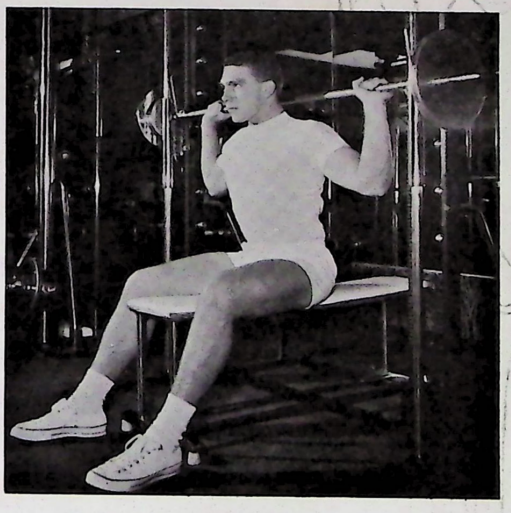
Michael David, gifted young actor of the 20th Century-Fox Films Studio, believes that a sound body lies at the foundation of all that goes to make life a success.

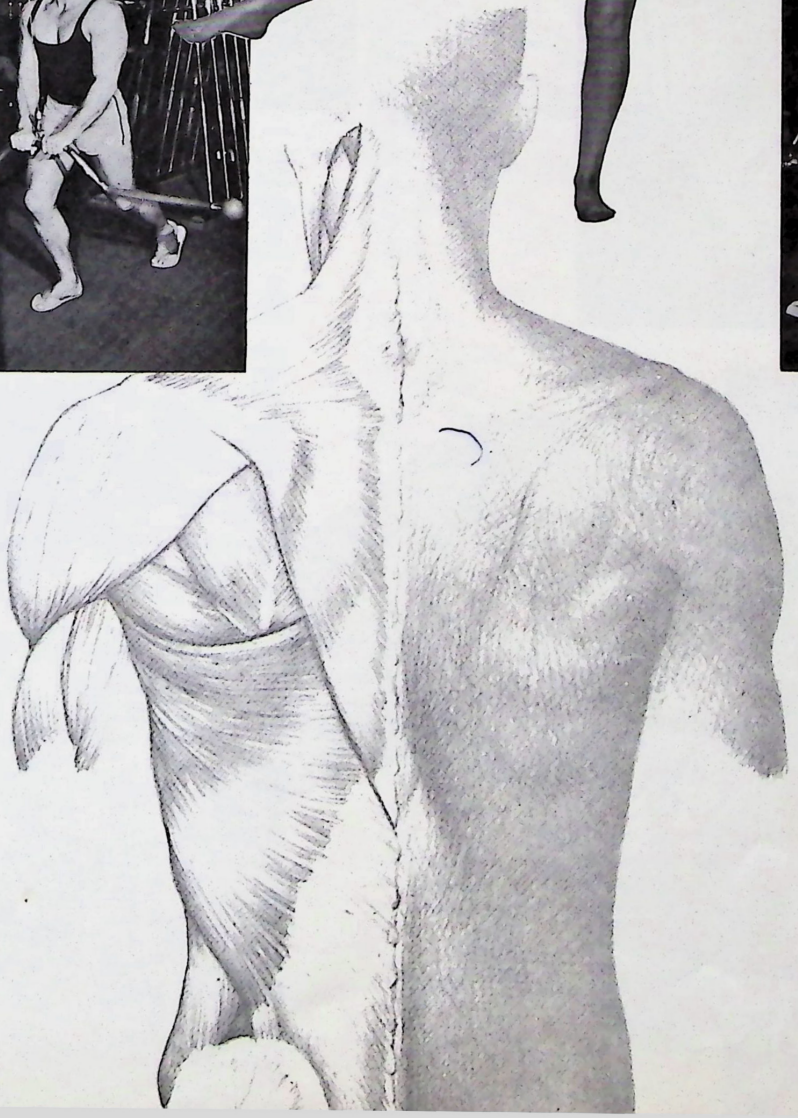
The chief desire of the human race is to attain happiness. True happiness is impossible without true health. And true health is impossible without exercise.—TANNY

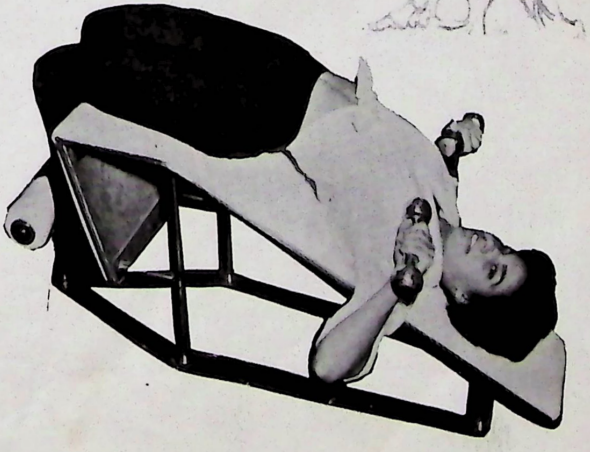






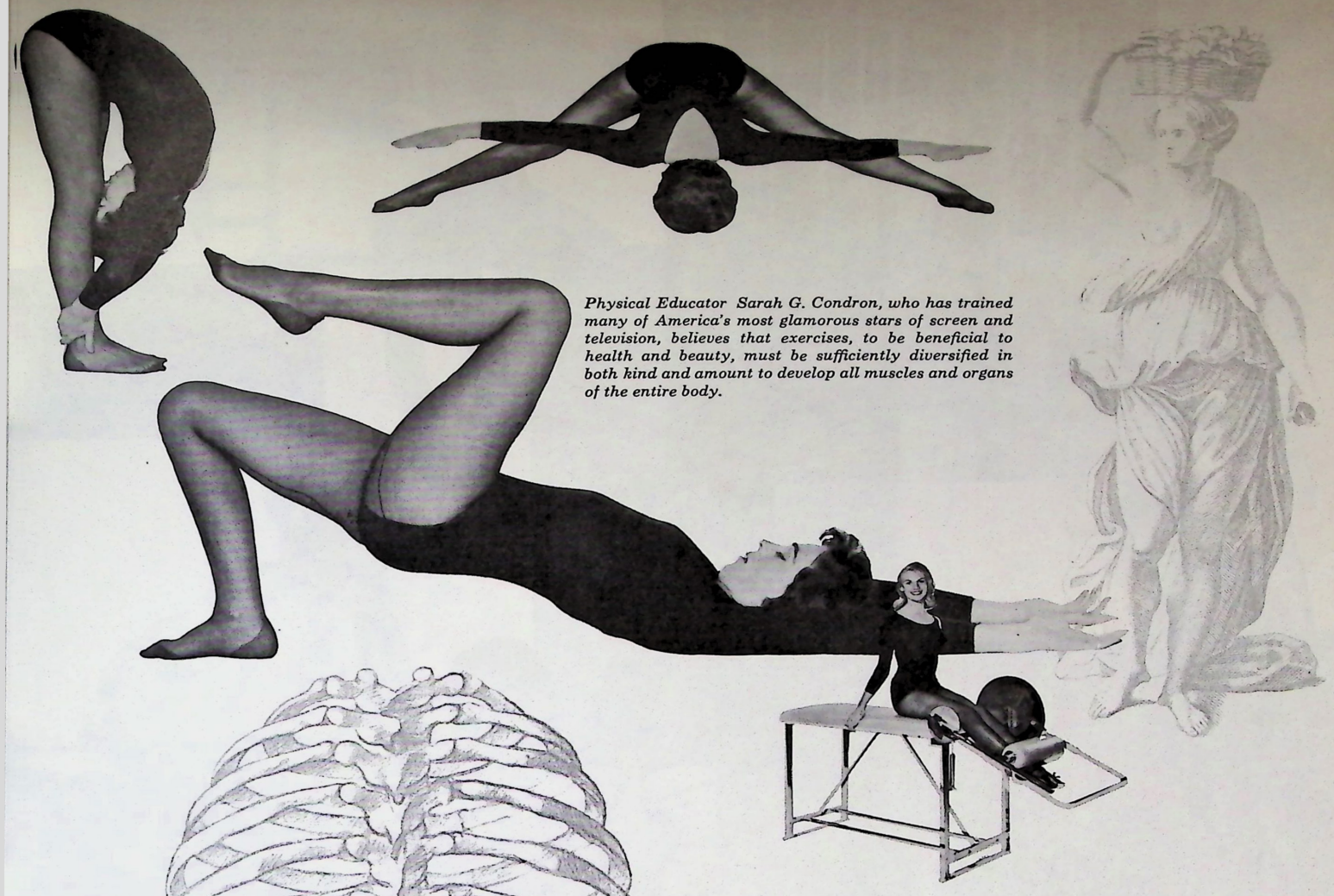




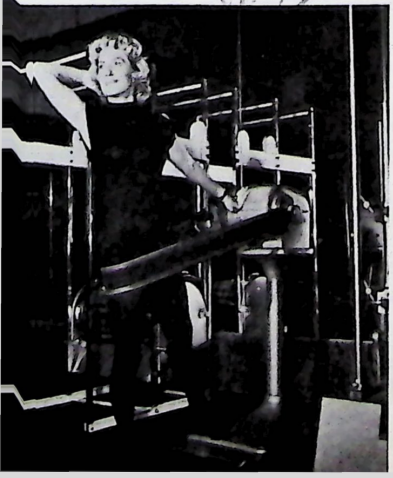


From exercise comes erect postur
a strong, well-knit body and a buo
ancy and exhilaration of spirit wort
untold wealth.—TANNY

Exercise in some form is a daily necessity. The underlying principle is simply the proper use of every part of the body. The path of physical well-being takes you toward good health and long life. Elasticity and movement are the keynotes in maintaining every vital part of the body. They can only be attained by regular exercise.—TANNY



Physical Educator Sarah G. Condron, who has trained many of America's most glamorous stars of screen and television, believes that exercises, to be beneficial to health and beauty, must be sufficiently diversified in both kind and amount to develop all muscles and organs of the entire body.

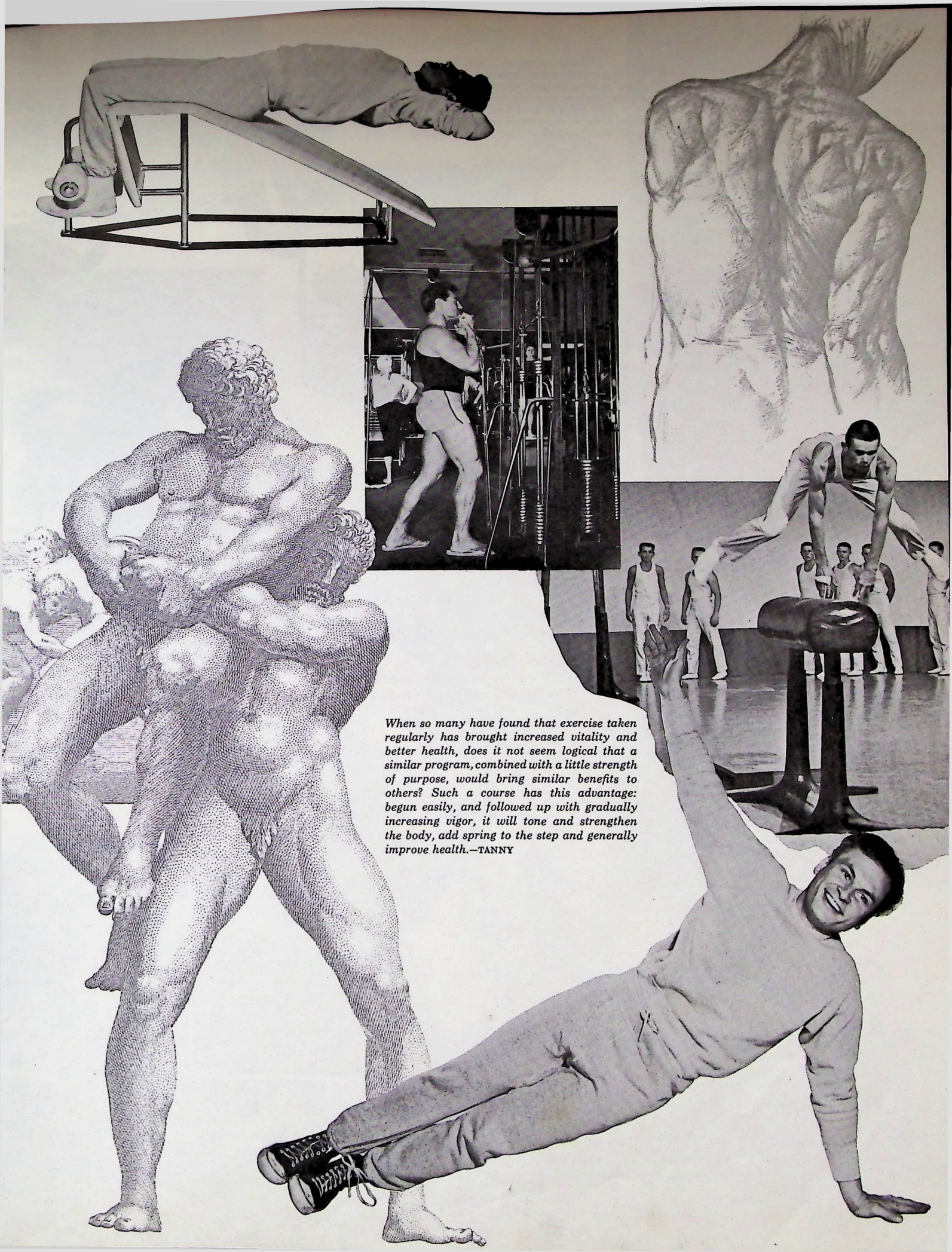


All people must have exercise to remain healthy. If this exercise is of the right kind, it will develop not only strong muscles, but a strong heart, strong lungs and a strong stomach — an unbeatable combination that invariably produces robust health and long life.

—TANNY

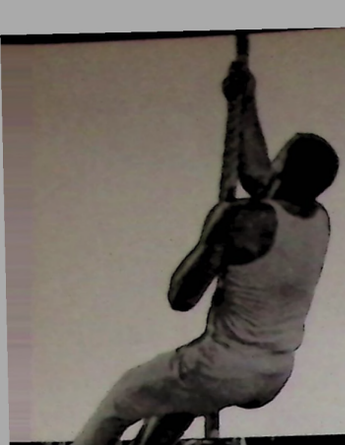
Health can be banked like money. Its presence on a rainy day is a great comfort.
—TANNY

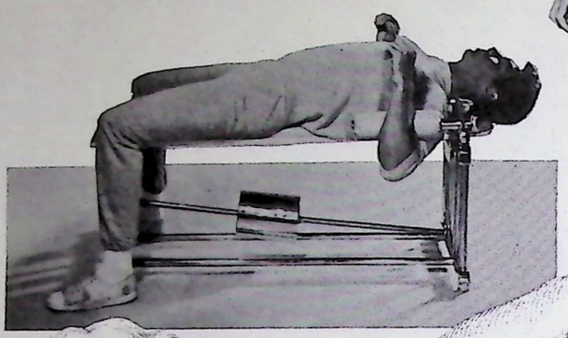
It would be well for every man who begins to feel his age to at once adopt a moderate, sensible course of daily exercise and to enter into it with a good share of his own former energy and vigor.—TANNY

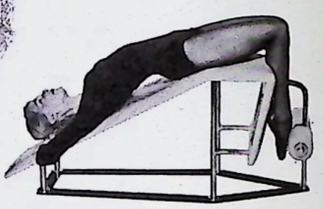


When so many have found that exercise taken regularly has brought increased vitality and better health, does it not seem logical that a similar program, combined with a little strength of purpose, would bring similar benefits to others? Such a course has this advantage: begun easily, and followed up with gradually increasing vigor, it will tone and strengthen the body, add spring to the step and generally improve health.—TANNY

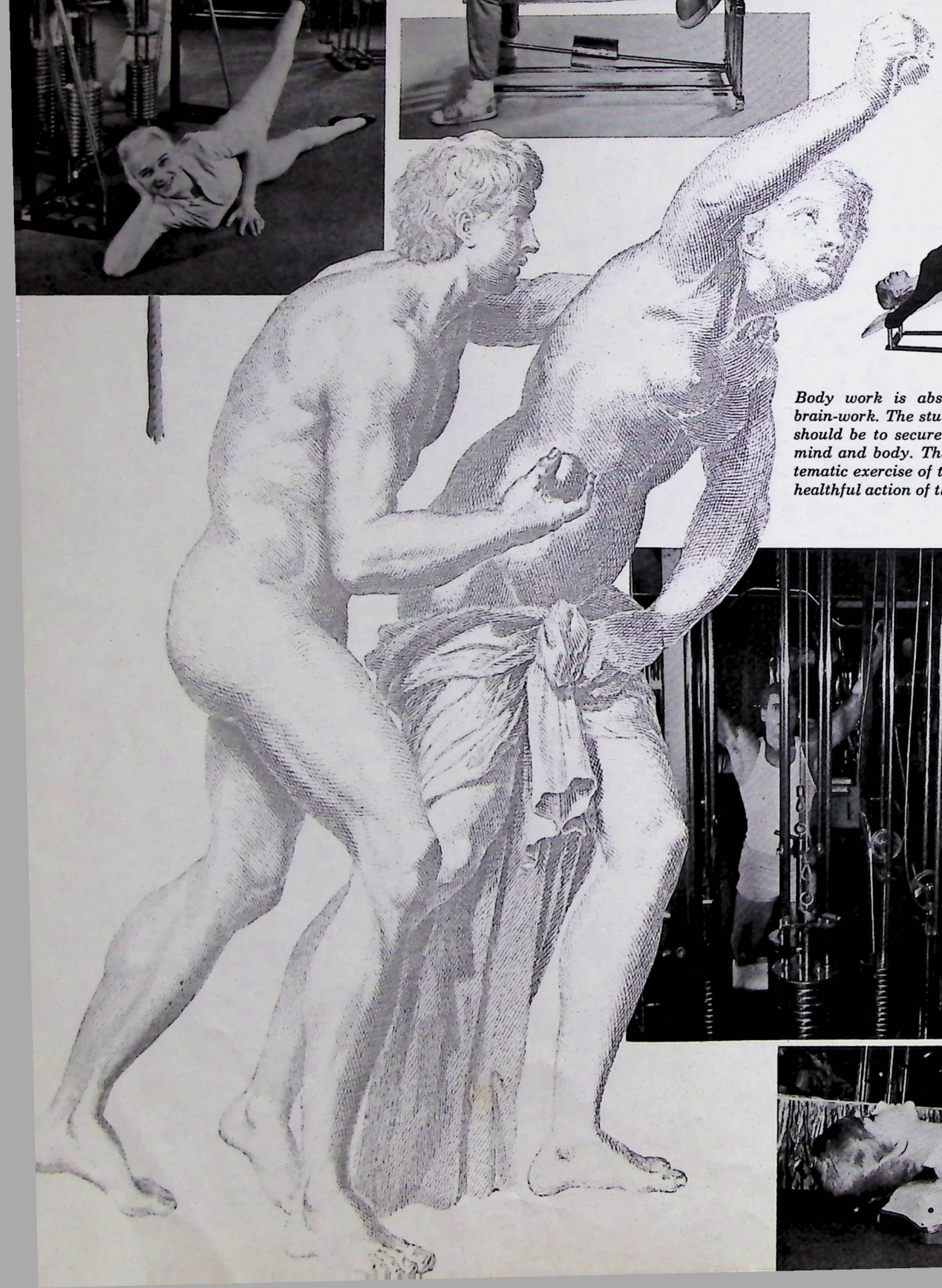
Physical education is the all-around training whereby the potential possibilities of an individual may be developed to a high degree – not alone the physical, but mental and spiritual as well. Its object is the attainment of a well-adjusted, coordinated, controlled mind and body with which to meet life. Health, strength, skill and beauty are the physical by-products.—TANNY

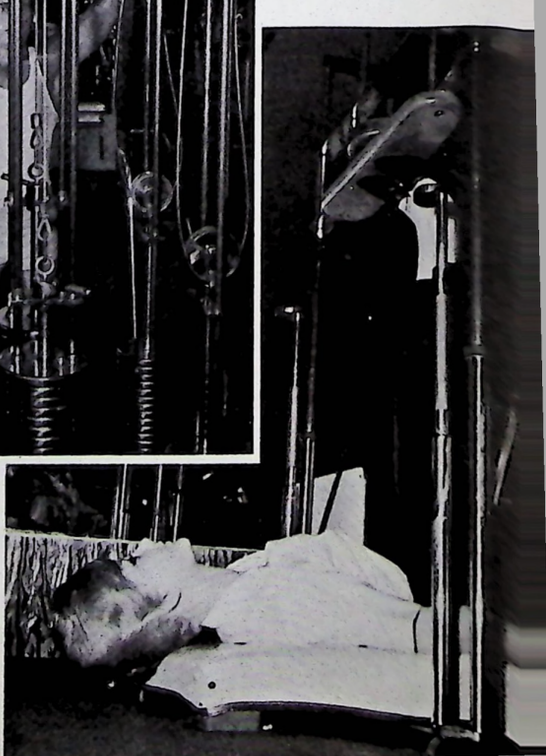




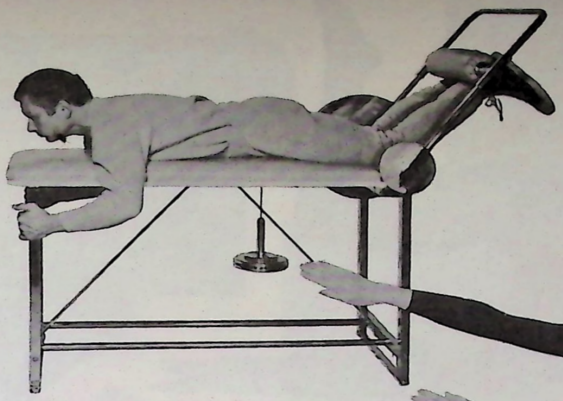


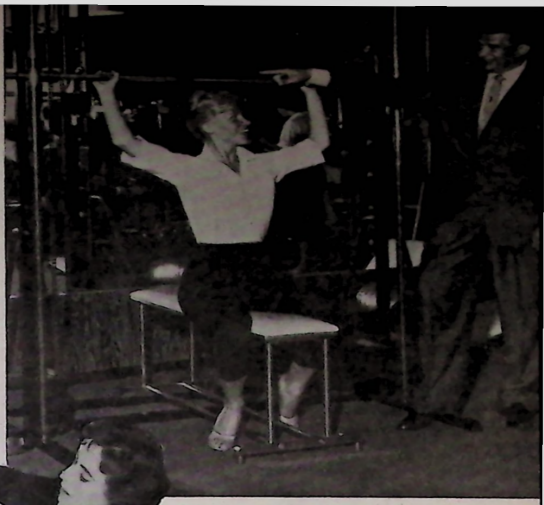
Body work is absolutely essential to first-class brain-work. The studied efforts of the health-seeker should be to secure well-balanced exercise of both mind and body. The proper nourishment and systematic exercise of the body contribute much to the healthful action of the mind.—TANNY

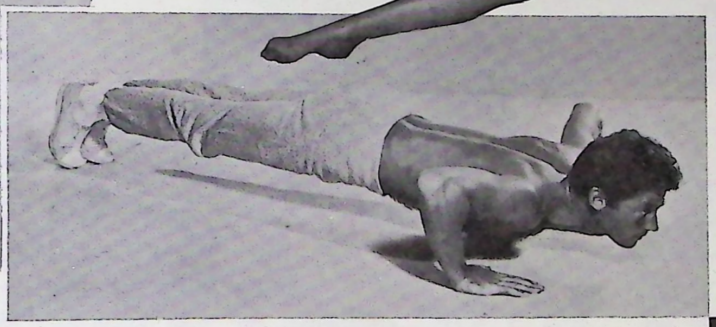




It seems reasonable to believe that if people exercised their entire bodies as constantly and vigorously as they habitually use their minds, their physical and mental strength would endure equally.—TANNY

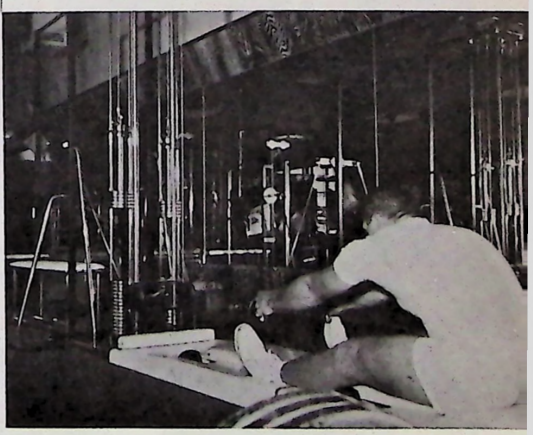




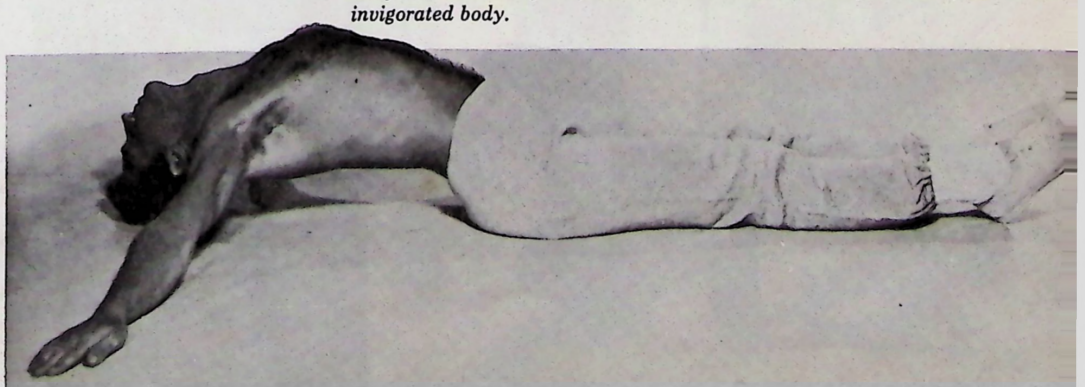


You may stay young gracefully instead of growing old gracefully, by exercise and clean living.—TANNY

As long as a man breathes he must exercise his body as regularly as he eats his meals, if he would maintain it in health.—TANNY

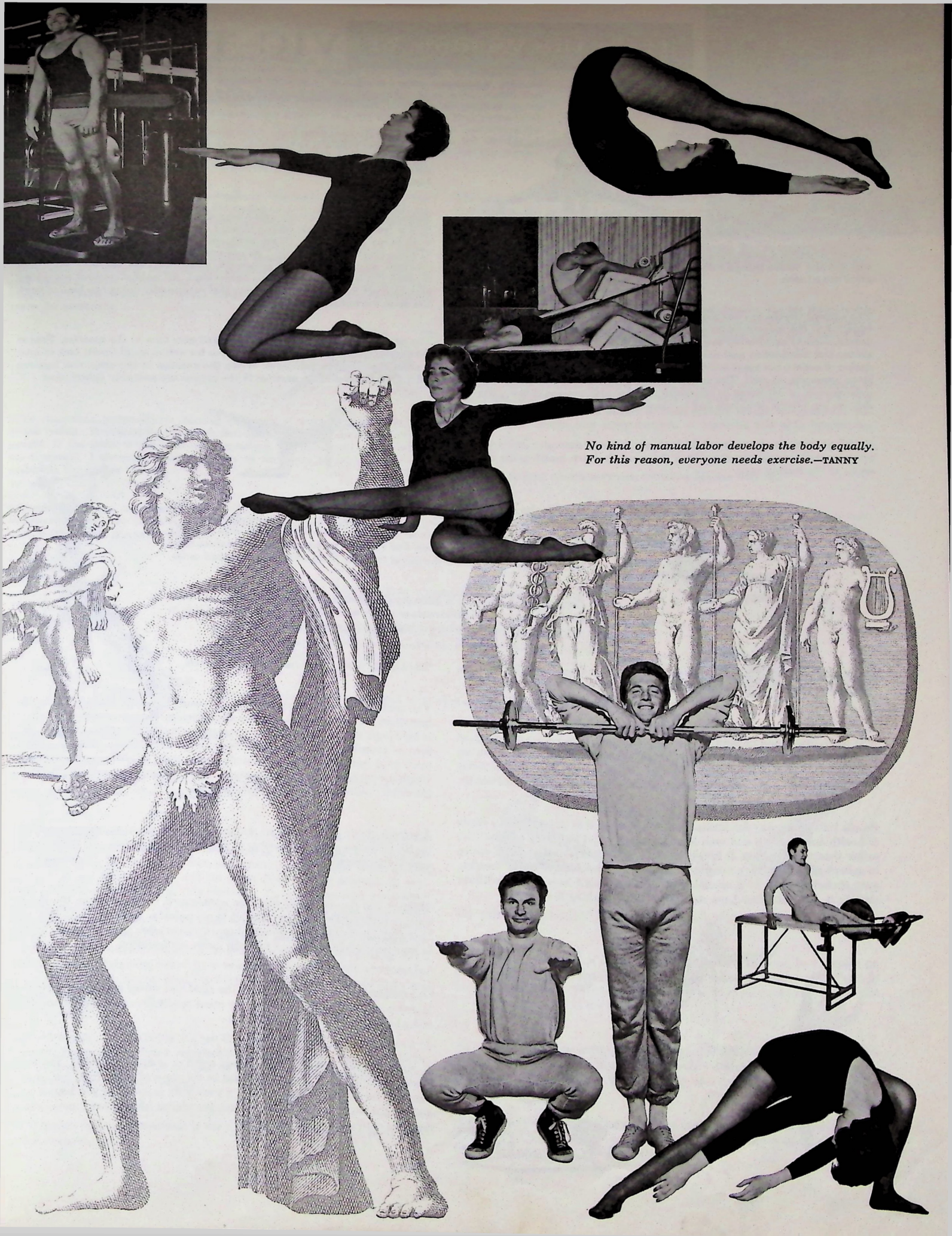


John Richardson, brilliant young motion picture actor under contract to 20th Century-Fox Films Studio, believes that one who neglects daily exercise is only half alive and does not know the pleasure of an invigorated body.

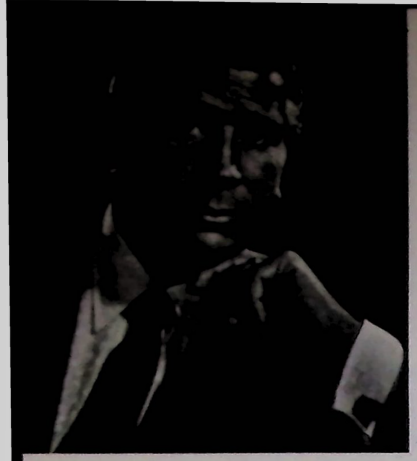


Exercise is an essential. It is one of the ways by which we can achieve health, happiness and efficiency in the greatest degree and with great certainty.—TANNY

It can hardly be denied that physical exercises may contribute to strengthen the individual in the struggle for existence.—TANNY



No kind of manual labor develops the body equally. For this reason, everyone needs exercise.—TANNY



from the Wisdom of VIC TANNY

I build strength. I teach men, women and children how to live so that they will get the better things into their lives and will possess good health in great abundance.

The ancient Greeks are our masters in all the arts. It is universally acknowledged that the masterpieces of their sculpture, architecture, philosophy, drama, comedy and history are unsurpassed. Their bronzes, pottery and tools arouse our admiration and delight. However, the Greeks were not merely a nation of artists, but great warriors, merchants, colonizers and navigators and great scientists, as well. The men who had the brains to create the greatest masterpieces of all times in literature and art also possessed the ability to explore the secrets of nature and to discover the secrets of health.

Health abounds in every breath of fresh air, in every muscular movement, in every normal, courageous thought of the mind. In brief, health is the natural estate of the human race.

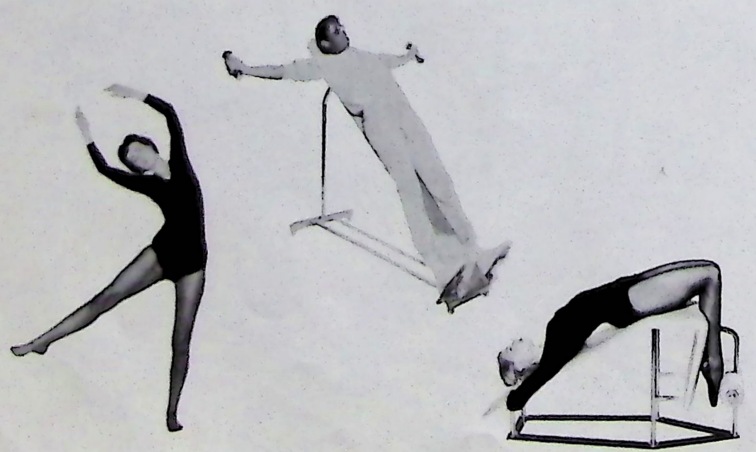
Taking the word exercise in the largest sense, it signifies rules for perfect coordination of mind and body. It is impossible to dissociate the two. The body is affected by every mental and moral action; the mind is profoundly influenced by bodily conditions. For a perfect system of health, we must train the body, the intellect and the moral faculties in a perfect and balanced order.

Ease makes children; it is difficulty that makes men. Many persons owe their good fortune to some disadvantage under which they have labored and it is in struggling against it that their best faculties are brought into play.

The choicest blessing bestowed by the Almighty on man is health; let it be our constant study to preserve this inestimable treasure.

Enthusiasm is the key that opens many doors to success. To be enthusiastic is to be energetic and no man can be truly energetic if he does not have good health and sound nerves. The tense person is usually a pessimist, never an enthusiast. Mental achievement obviously depends primarily upon nervous and muscular integrity. Even moral health depends much on physical health.

People believe in many far-fetched systems because they point out easy roads to health and strength and man is ever prone to credit alluring possibilities, rather than harsher facts. It is easy to perform light exercises, it is still easier to submit to having one's muscles rubbed and it is easiest of all to breathe, even though that be in a special way. As men would have money without earning it, so would they have strength without working for it.



Health is nature's reward for getting into harmony with her laws.

Under the changed conditions of the present, man tends toward an unnatural type of life. While it is true that man's advancement in civilization has brought a multitude of advantages to the human race, it has also brought many conditions of living which are fundamentally detrimental to human beings.

Some people, when they are asked why they do not join a gym and exercise in it a few times a week, reply, "Why, I don't need the gym. I get plenty of work at my business," or, "I am outdoors half the time, walking around," or, "I get a great deal of lifting; I do not need the gym." This is a mistake, for everyone needs some kind of gym work, no matter what his daily work may be, even if it be outdoor work of a heavy kind. All need exercise of some kind to counteract the deforming tendency that continually doing one kind of work has upon the human body.

The first need of exercise is to develop and give tone to the muscles. Tone is the quality of muscles that prepares them for action at all times; lack of tone is often described as flabbiness. When the muscles in the arms and legs are flabby, the heart and the muscles in the organs are probably flabby, also.

The highest blessing we can possess is health.

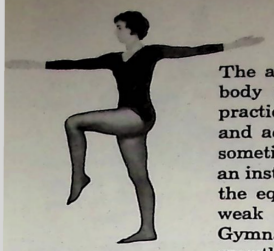
The tradition that the posture of a man reveals the wellsprings of his health, happiness and efficiency, is founded upon good biological science. If the head is held high, the back straight, the chest up, we know that there resides in that man an abundance of vitality and power that must be based without question upon good health and must absolutely reveal itself in all that he does – and which produces happiness and success. In a woman it is shown in the high, splendidly poised head and queenly bearing.

A reform of our diet and of our methods of living would greatly improve the health of the people. The number of chronic invalids and drug-takers would shrink very greatly.

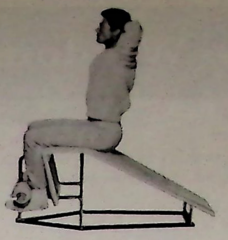
Muscles can do only what they are accustomed to doing. They cannot act quickly if they have not been trained to act quickly, any more than they can bear great strain and make powerful contractions when they have been taught to bear only slight strain and to make feeble contractions.

One frequently finds alert minds in the aged, but rarely alert bodies. No one knows precisely how long a vigorous mind might live; its spark is too soon quenched by its feeble tenement.

A woman's great privilege (if it is not a duty) is to be beautiful. You were beautiful in the eyes of your husband in the days of courtship; you can be beautiful for all the days of your life if your body is strong, if you keep it trim and do not slump – and you will have the charm of wholesomeness, which can fade only with illness or neglect.



The art of gymnastics consists in regulating the voluntary motions of the body and in giving them more strength and precision. It embraces the practice of all exercises, tending to render man more courageous, intrepid and active; it enables him to overcome difficulties, to preserve health and sometimes to re-establish it. Gymnastics are useful in all professions, as an instrument for becoming dextrous in every undertaking. They re-establish the equilibrium of the different parts of the body, calling into action the weak muscles and conducing to repose those which are too developed. Gymnastics is the art of regulating exercise and motion for the regular growth of the body, its perfection, strength and beauty.



Civilized man, the noblest of all animals, is the most unsymmetrical, yet we all love symmetry of form – the old Greeks and Romans even worshiped it. In remote ages, sculptors and artists molded and painted the nude forms of their gods and goddesses, heroes and heroines, so skillfully that the works of some of the old masters seem to us sublime in their perfection of outline. What man or woman in poetical, ancient Greece would have worshiped a pot-bellied god, or a scrawny-necked goddess? It is sad that many men in our modern times, whose fine brains and ripe judgment command the respect and admiration of the world, should possess bodies so disproportioned as to be grotesque.

The American university is turning out men of strong intelligence, but weak bodies. It cannot be expected that they will be of much use in the world. If the body is not properly nourished, the mind will refuse to act as it should. I therefore hold that it is as necessary to take care of and cultivate the one as the other.

Exercises improve the general condition, strengthen the weak abdominal muscles, increase the lung capacity, improve coordination and – above all – create the proper mental attitude.

Serenity of mind is the immediate consequence of health of body.

The policy "to take the world as we find it" is the policy of the helpless, the selfish and the cowardly. Animals have to take the world as they find it; men do not.

Nowadays, few men feel obliged to work for health – they take pills.

We cannot buy health; we must deserve it.

Exercise is essential to human life and health. Daily exercise, properly taken, would restore many semi-invalids to health.

It is well known that when the system gets run down, from any cause, disease is more likely to enter and is much more slow at being shaken off. Thousands and hundreds of thousands of men and women endure hard work, mental strain, fret and anxiety, daily and for years. Indeed, they scarcely do anything to lighten the tension in this direction. They tell you they are subject to headache or indigestion, or other disorders, as if it were out of the question to think of preventing it. But had their work been so arranged – as it nearly always could have been, far oftener than most persons think – to secure an hour daily for pleasant, vigorous, muscular exercise, this running down would, in most instances, never have occurred. Exercise, until the muscles are healthily tired, insures good digestion, a cleared brain, sound sleep and buoyant spirits.

The old warning of the Bible, "Keep thy heart with all diligence for out of it are the issues of life," has a very forceful application to present-day affairs. The training of the heart for the race of life is one of the wisest expenditures of time and effort that can be made.

Good health in great abundance is the rejoicing of the body that is alive and full of strength.

The physical nature will thrive in itself and overcome its insidious enemies according to the pains and intelligence with which it is trained and educated for the performance of those ends. The mind is not capable of discharging its functions to full advantage without the most careful preparation for its work and neither is the body. The physical being has to supply the basis of energy for the intellect and the emotions, as well as to play its own part in the economy of existence.

The influence of exercise in removing fat is well known, the fat being burnt off in order to provide fuel for the muscles and – as one might perhaps expect – it disappears most rapidly from those parts where the muscles are most exercised.

There is some evidence to show that we attract to ourselves influences and conditions most akin to those of our own thoughts and lives. Those who live in an atmosphere of gloom attract to them gloomy things; those always discouraged and despondent never succeed in anything and only burden the lives of others.

He who has good health is young, whatever his age may be.

While the strength of each individual is limited, the ultimate strength of man is limitless. So long as we strive, we improve and though we reach our individual limit, we do transmit to our progeny our developed attributes.

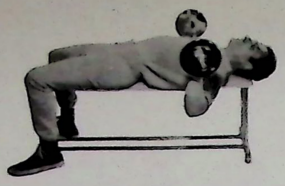
The pride one takes in a strong, active, beautiful body is in itself a joy.

The body is a unit. What hurts one part of it hurts the rest, to a greater or lesser extent. What helps in one way usually helps in many ways. There is no "cure all" and no "prevent all" and there is no royal road to health, except by living healthfully in all ways.

Knowledge of disease shows the importance of healthful living. If a person will train and keep himself fit, he can develop a high degree of bodily resistance and he need have but very few, if any, sick days in his life.

Failure to attain health is often due to failure to apply the knowledge one possesses. This may be due to mere stupidity, or to faulty reasoning, or it may be due to personality or character weaknesses.

from the Wisdom of VIC TANNY



We have been guilty of neglecting our heritage of strength, allowing our national physical fitness to degenerate by lack of physical activity.

How graceful and lovely a creature is woman when in the enjoyment of health! What harmony and regularity in her shape! What a beautiful combination of delicacy and strength! How sublime the union of intellect and physical beauty!

Physical education is the art of preserving health: of obtaining the most perfect action of body and mind during as long a period as is consistent with the laws of life. In other words, it aims at rendering growth more perfect, decay less rapid, life more vigorous and death more remote.

That strenuous exertion increases the rapidity of the circulation – thereby quickening thoughts and feelings, removing impurities which depress or destroy the mental function and improving the quality of the blood, as well as imparting exhilaration and vigor to the mental functions – cannot be denied. Therefore strenuous exertion, far from blunting the intellect, must clarify it.

There is a right and a wrong way to perform most bodily acts and the exercise that is of the most value teaches one the knack of using the muscles easily and effectively. The foundation of such skill is knowledge, but the achievement of it is finally due to practice.

Exercises of an individual character are often desirable to correct special physical defects.

With the Greeks and Romans, gymnastic exercises constituted the principal part of youthful education. Their objects were heartiness, strength and dexterity of body, elegance of form, courage, presence of mind in danger, and patriotism founded thereon. The appointment of public teachers for this purpose, paid by the State, and the public edifices erected for it in every city of Greece – some of them of vast extent and singular magnificence – sufficiently prove the high estimation in which gymnastics were held. If they could do all that, is it not time that we did a little of it?

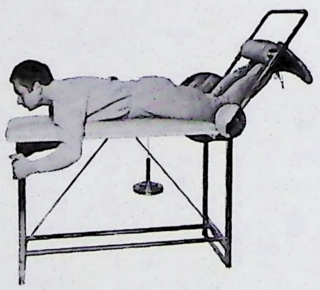
Millions of people pass their lives in cities and towns and at work which keeps them indoors nearly all day. Many hours, for days and years – under careful teachers – and many millions of dollars are spent annually in educating the mind, but the body grows up totally uneducated.

People of cheerful disposition are generally long-lived and anything tending to counteract the influence of worry and discontent directly contributes to the preservation of health. Despair can paralyze the energy of the vital functions like a sudden poison, while the fulfillment of a long-cherished hope has effected the cure of many diseases. History abounds with examples of strong men dying of sheer grief, as well as of great success in giving to others a new lease on life. Even hope can sustain the vital powers under severe trials.

Prejudice and ignorance have filled more graves than poverty.

The results of a wider knowledge of the principles of exercise have, in recent years, led to a great increase in the average length of life and to a great decrease in sickness.

It is of comparatively recent date that the bearing of posture upon health has been realized. Formerly, the chief arguments for good posture were from the esthetic viewpoint, but an erect carriage, an easy walk and a properly adjusted mechanism are far more important from the standpoint of health.



Discontinue any exercise as soon as the muscles have become too tired to perform it vigorously. After a rest of a few minutes, the exercise may be renewed and continued until the muscles again begin to tire. Exercises, interrupted by rests, may be renewed until a point is reached where the muscles feel tired at the very commencement of the exercise; at that point, stop the exercise for that day.

Approximately ninety per cent of our health troubles and diseases are diseases of civilization and are avoidable; they spring from faulty methods of living which we can easily eliminate.

The purpose of exercise is for the development of the individual in physique, skill, self-confidence and efficiency.

Water is our best drink. After all, our body consists chiefly of water and as we lose large quantities of water every day, it is important to replace it by the natural element.

You can get a new automobile any time you have the price, but you can never get a new body — never!

As a necessary element in the education of the young, physical training should hold a place coordinate with that of the intellect — it should be a part of all academic training.

A sound mind in a sound body is the great object; one is dependent on the other and they are either mutually strengthened or mutually weakened. The mind and body are inseparable companions and while the breath of life animates our frame, while an immortal soul vivifies our organs, mind and body must be equally developed and afford each other aid.

If the body does not get enough exercise, not only is the circulation of the blood in the brain much diminished, but the brain and nerve substance begin to suffer from degeneration and atrophy, after which irritability and abnormal sensibility, nervousness and melancholy, soon result.

To live to a good age and not to enjoy life seems to me to a great extent useless and I feel sure that most of the bad health we meet with after fifty is largely due to unwise dieting and the lack of regular exercise.

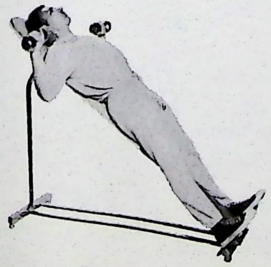
The way to good health and long life is easy to find. Right nutrition is the principal element; in addition, of course, fresh air, exercise, cleanliness and rest are required. Those who live in this manner have every chance to live long, happy and useful lives, up to a hundred years or more.

The modern diet creates flabbiness and obesity, especially if overeating is combined with insufficient exercise. It may safely be asserted that obesity is a disease.

Many young people, as well as older ones, look upon sleep as a waste of time, especially when there is something to do that seems more important than sleeping. Success in brain-work depends upon having a brain that works well. A brain that is still fatigued by lack of sleep does not work as well as it would otherwise. Sacrificing sleep usually means sacrificing some of one's intellectual power.

Breathe deeply of God's fresh air and keep your health, those of you who are well; for those who are sick there is nothing like exercise to bring you back into the ranks of the well and strong.

During exertion, the volume of air taken into the lungs is vastly increased and the circulation of the blood is much quickened, as, loaded with a large supply of oxygen, the blood flows to the muscles, nourishing them and, at the same time, burning up and carrying away particles of their fat.



The person whose duty it is to arrange exercises for the use of others must, of course, have a knowledge not only of the aims of gymnastics, but also of the living material with which he has to work. He must not only know something of the anatomy and physiology of the human body, but he must have a comprehensive special knowledge in these fields and he must constantly strive to increase his insight.

We live in a restless age. We disregard the warnings of our body when it urges us either to abstain from food or to take exercise; we also disregard its demand for rest and sleep.

Beginners are prone to become discouraged because a very little vigorous exercise, especially when it involves the upper muscles, fatigues them quickly. Let them recollect that a very little of the right kind of exercise today prepares them for a little more exercise tomorrow and for still more exercise the third day, and so on.

Overeating and physical idleness go together and thus men suffer from avoidable diseases which inflict upon them years of unnecessary ill-health and suffering, followed by untimely death.

The heart is not nearly so delicate as people imagine. Under-strain of the heart, with its consequent weakness, kills far more persons than over-strain; "heart failure" is perhaps the most common of the many diseases to which the sedentary are liable. Exercise is a preventive and its best known remedy.

Health depends upon active exercise and if it is not taken, health is soon lost.

Poor posture causes strain of muscles and joints and misplacement and poor functioning of many organs. It interferes with circulation throughout the body, gives awkwardness in motion, is unsightly and conveys the impression — often a true one — of lack of fitness and inferior personality.

All fatigue is essentially nervous fatigue.

A man must control his temper, or it may some day control him.

Defects of personality are often responsible for poor health; a person may be too lazy to do what would make him well.

Let every girl and woman in this land bear in mind that, from every point of view, a vigorous and healthy body, kept toned up by rational, systematic, daily exercise, is one of the very greatest blessings which can be had in this world; that many persons spend tens of thousands of dollars in trying to regain even a part of this blessing, when once they have lost it; that the means of getting it are easily within reach of all who are not already broken by disease; that it is never too late to begin and that one hour a day, properly spent, is all that is needed to secure it.

Regularity in exercise is the rule. Spasmodic exercise — hours of it on one day and none the next few days — is not equally beneficial to the health. In fact, occasional spurts of exercise may actually do harm if they are at all severe. A moderate amount done regularly gives the best physique.

from the Wisdom of VIC TANNY

At almost every point in life, there is a chance to build up health or to undermine it. It takes knowledge and its intelligent application to be "fit" for the game of life.

It is a most curious fact that persons will spend large sums for advice from physicians; they will turn their backs on business, home and friends, in order to go abroad for their health and almost give up eating, subsisting only upon nauseating food – all for what? It is obvious that they need do none of these things. They require – simply – exercise.

I urge the wisdom of a periodic checkup by a competent physician.

The fat man has three characteristics: he eats a large amount of food; his body mechanism is so regulated that the food which he takes is absorbed – that is, he has a high availability of food; and he burns up little food in muscular work. Any one of these three factors may be predominant. Usually, however, the fat man absorbs more of what he eats and is less active than the thin man. Lethargy and obesity are common associates.

We are only beginning to realize the wisdom and healing power of the human body.

Indolence is the mother of ugliness.

Exercise bears an important relation to the weight of the body. If an individual is overweight, exercise will take off fat. On the other hand, the beneficial effects of exercise are such that the blood goes to all parts of the body and more waste is taken away, so that people who are underweight will actually gain in weight. As a matter of fact, people who are normally active physically tend to approach the normal standards of weight.

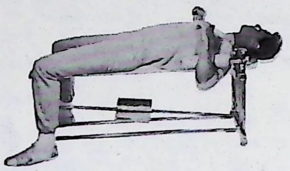
Poor posture is ugly to look at. Aside from the ugliness of slumping, the poor circulation it inevitably causes brings on various forms of ill-health that further rob one of a good appearance. Dull eyes, pallor and muddy skin are frequent accompaniments of poor posture.

The gymnasium was, with the Greeks, the place for both physical and intellectual education. The training of body and mind went hand in hand. It was in the gymnasium that persons of all ages congregated daily; while some were reciting poetry or delivering lectures on philosophy, others were performing, or criticising the performance of various exercises adapted to develop all their physical parts and powers, or to qualify them especially for arms. Probably no Greek town of any importance was destitute of these schools of exercise.

The stimulation of heart action and of the circulation of the blood is the most important effect of exercise.

Those who exercise a good deal seem less likely to have colds, other things being equal, than those who are inactive. Exercise accomplishes this improvement in health by means of the training it gives to the temperature regulating system.

Nature never attempts to maintain a useless organ and almost as soon as an organ is not regularly used, she sets to work to demolish it; or at any rate, she wastes little or no time in trying to keep it in repair. This is true all through vital economy and is nowhere more clearly seen than in the case of the muscular system. A diseased muscle soon becomes thin, pale, relaxed and weak; very shortly, a change begins which is termed fatty degeneration. Nature does not think it worthwhile to keep so much valuable nitrogenous matter lying idle and so she sets to work taking the muscle to pieces and carrying it away, little by little, for use elsewhere, depositing in place of the muscle substance little particles of fat.



Science has only lifted a corner of the veil which hides the mystery of the human body.

Exercises should never be undertaken by an inexperienced person without proper guidance or instruction. To the same extent as the physician who prescribes medicine, the true teacher of gymnastics assumes responsibility for prescribing exercises.

Those who regularly get too little sleep must expect to lack vigor and energy and perhaps to fall ill. They must also expect to lose their good looks. Those whose appearance is of special importance to them – as, for example, actors and actresses – realize the value of sleep. Trying to get on with less sleep than is needed is likely to make one poor company for himself and for others, because of the irritable "jumpy" state of the nerves and the tendency to be gloomy and pessimistic. Finally, continued loss of sleep leads to dullness of wit and a lower grade of intellectual performance.

Health is our greatest national resource. It is the basis not only of all efficiency, but also of human happiness.

Daily exercise is advisable in every case, when possible. Only by this means can the best results be reached. If daily exercise is impossible, three times a week should be urged. Twice a week should be the minimum and is hardly sufficient when dealing with unusual conditions.

It is a mistake to think that work is in any way identical with exercise.

The human body is miraculously made and, notwithstanding the great progress of science, it is still an enigma to us.

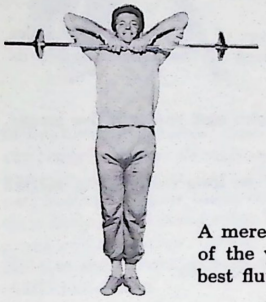
Air and sun are foods, cleansers and tonics. We should endeavor to get as much fresh air and sunshine as possible, but we do not get the maximum benefit by exposing ourselves to air and sunlight in a state of inactivity.

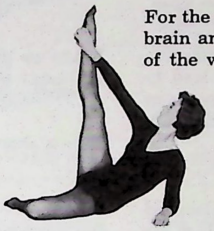
The poor body endeavors to do its best. Unfortunately, its daily warnings are unheeded and when long-continued ill-treatment in every conceivable form leads at last to its degeneration and decline, we blame in scientific terms some obscure function of the body – or the elusive microbe or some innocent gland – instead of blaming ourselves, our greed, our obstinacy, our folly and our love of ease. The pursuit of ease leads to disease.

Without health, no earthly acquisitions are worth their price.

Muscular activity, such as exercise, increases the body's functions. More blood comes to the skin and more blood goes away from the skin during exercise. More waste products are thrown off, as well as more heat. The same thing applies to every part of the body. The brain, for instance, gets more blood during physical activity and the waste products are much better removed. The effects of exercise, however, are particularly evident in the lungs. Rapid breathing means that the blood is circulating around at a much greater rate of speed and thus more fresh air is brought to the lungs and the waste products driven off. As a result, during exercise there is a beneficial change in the lungs and the heart as well.

It is only those who have strength who delight in using it – and use it easily and calmly. The opposite condition – that of dragging about at one's work, without energy or enthusiasm – is most often found in those whose bodies are undernourished and under-exercised.





A mere pain will bias the thoughts, the sentiments and even the principles of the wisest man, as surely as a small fissure will mar the music of the best flute. A weakly man is half sick.

All bodily ailments are more or less urgent appeals for help.

Whoever has noticed the effects of exercise and observed the great refreshment of mind and body arising from it, will no longer doubt its efficacy.

Weight-lifting develops great strength in the loins, back, abdomen, shoulders, arms and legs, but it is unquestionably dangerous for an untrained man to attempt to lift very heavy weights. What may be called toleration of strain is acquired gradually; so, the weights handled by a novice should be, at first, comparatively light, then medium and slowly graded to heavy.

The variety of exercises open to woman is almost as great as to man.

"Music," said Plato, "is comprised of every description of speech, whether in prose or verse, which may tend to form the mind"; gymnastics comprise all the exercises that can serve to improve the body.

Exercise does for the body what intellectual training does for the mind: educates and strengthens it.

There is indeed no luxury that the millionaire can buy half so precious and satisfying as the sense of abounding physical vigor.

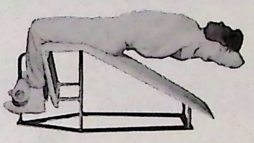
Laziness is at the root of most failures.

Exercise is glorious work and will renew your youth, not only in a delightful way, but to an extent little short of incredible. It will scour your mind of business and send you back to your work a different person and a better-natured one.

Unfortunately, in the present age all is sacrificed to intellectual education, as though nature were unable to bear exertion of body and mind. The great art in education is to combine mental and physical development, not to oppose one to the other.

How many mental giants have broken down from mental overwork solely because they lacked physical stamina! For the sake of minutes, they have lost valuable years. How much more useful work could they have accomplished had they troubled to build up physiques sufficiently strong to have carried it on! Nor is this all: physically incapable, they have frequently been unable to beget children who might have inherited their mental vigor.

For the man who develops the highest vigor, the strongest nerves, the clearest brain and the steadiest moral courage, there never was a time in the history of the world so full of opportunities for achievement.



Most of the diseases from which we suffer may be classified under six headings: diseases arising from faulty food and feeding; diseases arising from lack of air and sunlight; diseases arising from lack of exercise; diseases arising from lack of rest; diseases arising from faulty habits; diseases arising from a combination of these causes.

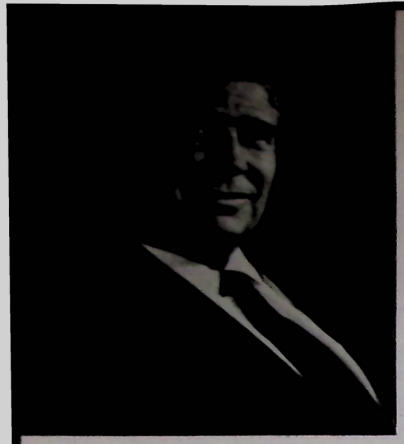
The first condition of good health is a life made fruitful by toil and ennobled by good actions.

When you do not feel like exercising is generally the time you need it the most. All should take some kind of physical exercise as regularly as they eat their meals. Exercise as a matter of principle every day and you will soon learn to love it. Best results are obtained from exercise when it is taken at a regular hour every day. They who neglect to take daily bodily exercise are committing slow suicide.

He who is wholly strong is necessarily healthy, whereas he who is partly strong and partly weak is liable to perish prematurely – through the breaking down, not of his strong, but of his weak and consequently unhealthy parts.

At first, you may not be able to do hard exercise, especially with the ordinarily weak muscles above the waist; but let it be your aim to progress – that is to say, gradually train your muscles to contract with more and yet more force – until finally they become capable of considerable effort.

The man who really succeeds is he who is capable not only of developing his own ideas, but of assimilating and translating into useable terms the ideas of others.



from the Wisdom of VIC TANNY

By cultivating ease, we cultivate disease.

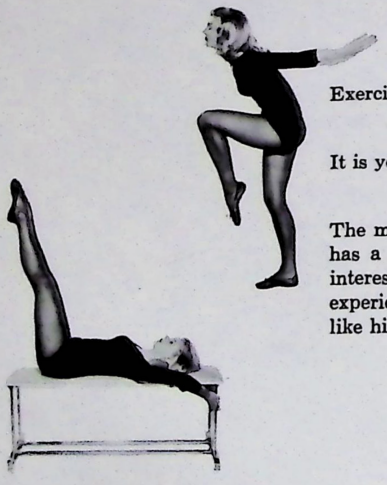
I am in the business of making superior people, capable of living one hundred per cent lives – an increasingly better race, living more fully, happily and efficiently, to the greater glory of God – and man.

Mental health and physical health go together. The brain is as much a physical organ as the stomach or the liver.

Little and often in the matter of taking body exercise will do much more good than much and seldom. It will do one more good to take a little exercise for an hour or so every day than five or six hours once a week.

There should be enough exercise every day to stimulate the circulation thoroughly and to make one breathe faster and harder. It should lead to a moderate amount of physical fatigue. The more exercise a person can take without interfering with his regular tasks and without producing too great fatigue, the better his health is likely to become.

Look for a moment at the value health has to a man in any of the learned professions – of having a sound and vigorous body, with each branch of his vital system working regularly, naturally and in harmony with the rest.



A young man who goes to college, on receiving his degree, should – if his moral and mental duties were attended to – be graduated not with an educated mind alone, but an educated body as well.

The importance of exercise in its effect upon mental states, which today is considered one of its most desirable results, was recognized by Pliny, whose philosophy has sent this message through the ages: "The mind is stimulated by movements of the body."

Lack of exercise in which the feet are used may lead to their becoming weak. The leg muscles that control foot motion are used in walking, but walking may be done in such a way as to give these muscles little use, or even to use them so badly that they stretch instead of growing strong. Those who do no exercise but walking often do not know how to walk.

For human beings and for the highest realization of human effort, the body is best considered as the instrument of the mind, the organ of expression for the soul and personality of the human being – and not as an object of development or culture for its own sake.

Do not always be guided by your feelings in the matter of exercise, for when one feels like taking exercise the least is just the time he generally needs to take it the most.

Physical exercise has four prominent purposes: it develops the nerve-muscle mechanism – normal growth or the correction of any defect of this mechanism requires exercise; it indirectly maintains the health of the other functions of the body; it aids mental development and, finally, it is a most effective form of recreation.

Today we have the same bodily frame and organs of our fighting ancestors, but today we have all of science and the wisdom of the ages to guide us.

Take a short vacation daily and use it for exercise and you will live longer.

Physical education offers the best insurance, in the long run, for the welfare and happiness of the American people.

I keep in condition by taking scrupulous care of my body.

Exercise is for all who are interested in the preservation of health.

It is your habits that make you, not your occasional divergences from them.

The man in one hundred per cent physical condition is a happy one. Life has a zest, he has a keen appetite for the work that he is doing, he is interested in his business, his social affairs, his home, his projects. All his experiences have color and action. He is popular among his fellows; people like him because he likes them.

Every person has two educations: one which he receives from others and one – more important – which he gives himself.

Obesity is frequently treated as a joke, but it is by no means funny. Pronounced obesity is a condition which is apt to lead to most serious disease and untimely death. Our body is filled with a number of palpitating and ever-active organs and if large masses of fat accumulate among these organs, their activities become impeded and restricted. Besides, the individual has to carry about with him a heavy, dead weight. Masses of fat not only fill the abdomen and other portions of the body, but fat is apt to infiltrate into the heart and thus the heart muscle becomes gravely weakened.

Exercise is food, after a fashion, because it is stimulating.

A sound body lies at the foundation of all that goes to make life a success.

Too many of the professors in our colleges do not know anything about a gymnasium and what it can do for people.

Many physical exercises are taken only spasmodically – that is, on week-ends. This is not the way to train muscles, especially heart muscles. Few know how to train; they start each weekend with a spurt of excessive play and then are tired the rest of the week. Men over seventy compete at golf with men of thirty and forty; there is danger in such competition.

It is quite justifiable to be proud of a strong, well-built, supple body and of the skill with which it can do things. When the body shows the good care of its owner, he is entitled to feel self-respect and he will also merit the respect of others.

There is a psychological element in all exercise and it must be taken into consideration. Almost all exercises are good fun of one kind or another: some test the will and train it, others require determination and effort, which to normal man is a quiet but very real satisfaction. All useful exercises can be interesting.

No automobilist would dare to drive his machine forward heedlessly and carelessly, with no thought of periodic inspection and without proper oiling and care at regular intervals, unless his journey were actually one of life and death; yet, how often do we observe intelligent men and women urging their body machines forward heedlessly and carelessly – under the lash of greed and ambition – utterly disregarding disease possibilities and utterly blind to the danger signals which are to loom up so soon in their pathway of life just ahead.

Hippocrates taught not only that prevention is better than cure, but he urged that it is far more important than cure.

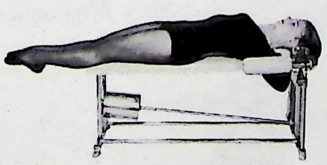
Man, in full possession of all his mental and physical strength, is a most admirable phenomenon.

So far as my experience goes, there is no kind of sermon so effective as the example of a great man.

The desire of men to become more complete, vigorous and healthy – to approach as nearly as possible the ideal man – has existed in all ages and has impelled them to make special efforts to secure these ends.

Beauty of face and form are lost when people eat too much and exercise their bodies too little.

I have studied the lives of a great many old men and women and have found that they owed their longevity not to some single factor, such as abstinence from alcohol or tobacco, but to living in accordance with nature's will.



A proper medium of exercise and rest is essentially important. Gymnastics without rest is injurious; one must counterbalance the other. Prolonged rest makes all the functions languid – even those of the brain are affected. In immoderate exercise, all the functions are imperfect, because there is weariness. Of all the exercises of the organs, the exercise of the intellectual faculties is the most fatiguing and necessitates a great degree of repose. The senses and the brain require rest long before the muscles.

The first line of defense is a healthy, well-nourished and resistant body.

Work is different from exercise. Work consists in doing the same things over and over again, until the muscles are tired out and the body is used up. Work does not build up muscles beyond a certain point – it wears down muscles and makes them fibrous, gradually driving the life out of them, and the parts of the body that are little used become weak and flabby from neglect.

Man holds his own destiny and can choose between good and evil and as time unrolls the scheme of the world it is not too much to hope that his choice will be for good.

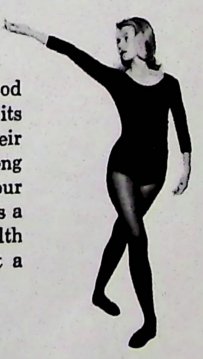
The necessity for daily exercise is now tacitly admitted by every intelligent man. The underlying principle involved is simply that of properly using every part of the body. Lack of use means decay, disease, death. The sure road to life and health is that which leads along the paths of physical rectitude. Elasticity is the keynote to the health of every vital structure and this can only be secured by regular exercise.

Physical education is too frequently left to chance and the preservation of horses may be said to attract more notice than the health of man – which, if not entirely misunderstood, is often wholly neglected.

The more man follows nature and is obedient to her laws, the longer will he live; the further he deviates from these, the shorter will be his existence.

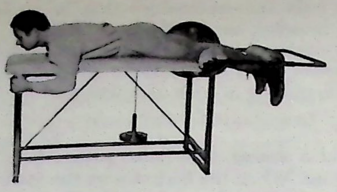
The activity of organs other than nerves and muscles depends just as much, though less directly, on physical exercise. The circulatory system must speed up for the supply of more oxygen to the working muscle and by doing so it calls some other parts into greater activity. Many organs tend to become sluggish in a life routine from which active exercise is excluded. The laborer's health is preserved by his day's work, but the office worker's sometimes is not. While some who lead sedentary lives retain the health necessary for their mode of life, there are others who acquire a tendency to obesity, to constipation or to headaches, unless they take additional exercise.

Because one occasionally hears of a famous man who can work many hours with little sleep, one is sometimes inclined to think that he himself should work harder and sleep less. This is a great mistake. A man may get along for a few days or a few weeks without sufficient sleep and notice no particularly bad results, but sooner or later he feels the effects of the accumulation of fatigue poisons.



Too much attention paid to our own bodies is not always productive of good health, but often the contrary. If we think about our health at all, on its unfavorable side, we should never brood upon our ailments or analyze their symptoms. The soundest course is, by constant practice, to cultivate a strong will power and valiantly fight against the ills of life, remembering that our thoughts and imaginations are the only real limits to our possibilities. As a rule, we raise our own mountains of difficulty and no man's success or health is likely to reach beyond his own confidence. Be an optimist and not a pessimist.

from the Wisdom of VIC TANNY



All medical experience indicates that as a nation our physical education is heavily in arrears.

More benefits may be gained by obtaining perfection of form and ease of execution in a few exercises, than by doing a larger number carelessly or with strain. However, from the point of view of stimulating interest, it is wise to change exercises from time to time.

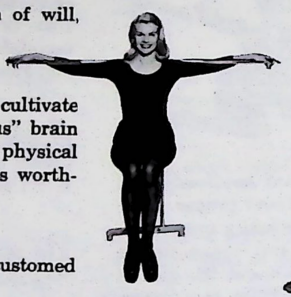
Is there any need of pointing out to a spirited woman the value of a sound, healthy and shapely body? Is there any sphere in woman's life where it will not stand her in good stead and render her far more efficient at whatever she is called on to do and make her far more attractive as well? Nor is the benefit limited even to her own lifetime; her posterity are blessed by it as well.

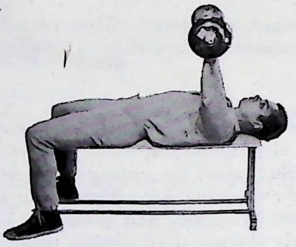
There is no way to get rid of the fat that is due to too much food, except to eat less or to increase the rate at which the food is burned up. In some cases, an increase in the amount of exercise will produce the latter result and the food need not be cut down.

Nobody desires to be merely just free from disease. We wish to work, strive, produce and overcome obstacles. We wish to amount to something in this world. This means endurance.

Many important organs perform their work better in those who have plenty of exercise than in those who do not. Exercise is one of the important ways of improving the appetite and digestion, of overcoming constipation and headaches and a poor complexion, of clearing and enlivening the mind and of steadying the nerves.

A strong, erect posture expresses to the world at large strength of will, alertness, poise and the joy of living.





When those who do much brain-work declare they have no time to cultivate their bodies, they do so not because they forget that the "precious" brain depends on the "despised" body for its nourishment, but because no physical education system has as yet thoroughly demonstrated to them its worthwhileness.

Stiffness of the body is often seen in persons who have not been accustomed to taking proper exercise.

The delightful feeling of strength which a woman will experience after only a few weeks of exercising will make her loathe to go back to the old listless weakness.

Physical education is as old as the human race.

The ancients were so fully aware of the importance of exercise that they considered it one of the first requisites in education. Legislators and philosophers pointed out the advantages of exercise; not satisfied with applying it to the development of the organs, they also had recourse to it as a therapeutic agent.

Work is not exercise. Work tears down, exercise builds up. Exercise trains the unused and weakened portions of the body and makes them strong.

Exercises will rest or excite, build up or tear down, depending upon what they are and how they are done.

Man was made for activity, as the study of metabolism has demonstrated, and if he refuses to obey nature's injunction, he must pay the penalty by diminished health – both of body and mind.

Barring the case of organic defect, there is just one person to blame if your body, or any part of it, gets weak. That is yourself. At once you reply, as millions do, "Oh! I have no time for exercise." That is not true. You have time for it, no matter how busy you are.

It is wiser to eat a little less than you think you need, rather than a little more.

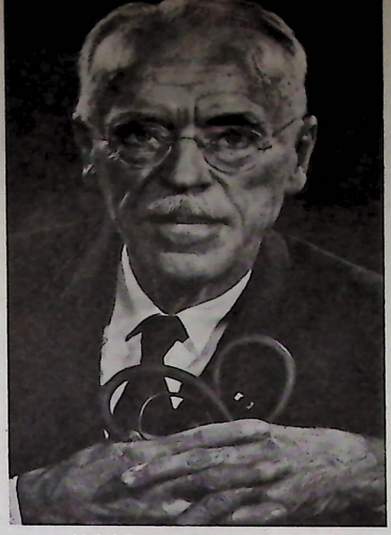
Exercises in the gymnasium are more attractive than home gymnastics, where the individual sets his own tasks.

It is a curious fact that compulsory wakefulness combined with mental activity often induces a state of morbid insomnia, an absolute inability to obtain the sleep which it was at first so difficult to resist. In such cases, the only remedy is fresh air and exercise.

If we eventually succeed in scientifically prolonging the life of the body, by means of a great and nearly equal development of all its muscles and organs, so that, after many generations, it might equal the present life of mind, what a great thing we shall have accomplished! Powerful organs, within perfectly harmonious bodies, would minister to proportionately great intellects, whose undertakings would puerilize our greatest mental achievements heretofore. And how wise might men become had they perhaps twice the number of years they have at present, in which to acquire knowledge and to create! This will not be, however, until man fully realizes that his physical efforts must equal the enormous mental efforts which he has conscientiously and unswervingly put forth since time began.

As the ages roll on, hope does grow in some measure. In the midst of all our weaknesses and all our many errors, we are certainly gaining knowledge and that knowledge tells us, in no doubtful terms, that the fate of man is in his own hands.

WISDOM AWARD *of* HONOR *Recipients*



HEART SPECIALIST
PAUL DUDLEY WHITE, M. D.

PRESIDENT JOHN F. KENNEDY

PHYSICAL EDUCATOR
VIC TANNY

The Wisdom Award of Honor has been presented by Wisdom Magazine to America's three most vigorous leaders in the national crusade for physical fitness: Eminent Heart Specialist Dr. Paul Dudley White, whose dedication to heart research and knowledge of heart disease has added immeasurably to the life span of his fellow man; President John F. Kennedy, whose vigorous campaign for a National Physical Fitness Program has alerted every American to the vital need for elevating the standard of health in the United States; and dynamic Physical Educator Vic Tanny, whose nation-wide Gymnasiums and Health Centers have given the great benefits of vibrant health and physical fitness to millions of American men, women and children.

THE PRESIDENT OF THE UNITED STATES ON PHYSICAL FITNESS

Since the time of the ancient Greeks, we have always felt that there was a close relationship between a strong, vital mind and physical fitness. It is our hope that using the influence of the national government that we can expand this strong spirit among American men and women, that they will concern themselves with this phase of their personal development. We do not want in the United States a nation of spectators. We want a nation of participants in the vigorous life. This is not a matter which can be settled, of course, from Washington. It is really a matter which starts with each individual family. It is my hope that mothers and fathers, stretching across the United States, will be concerned about this phase of their children's development, that the communities will be concerned, to make it possible for young boys and girls to participate actively in the physical life; and that men and women who have reached the age of maturity will concern themselves with maintaining their own participation in this phase of the national vigor – national life. Today we need both wisdom and strength.

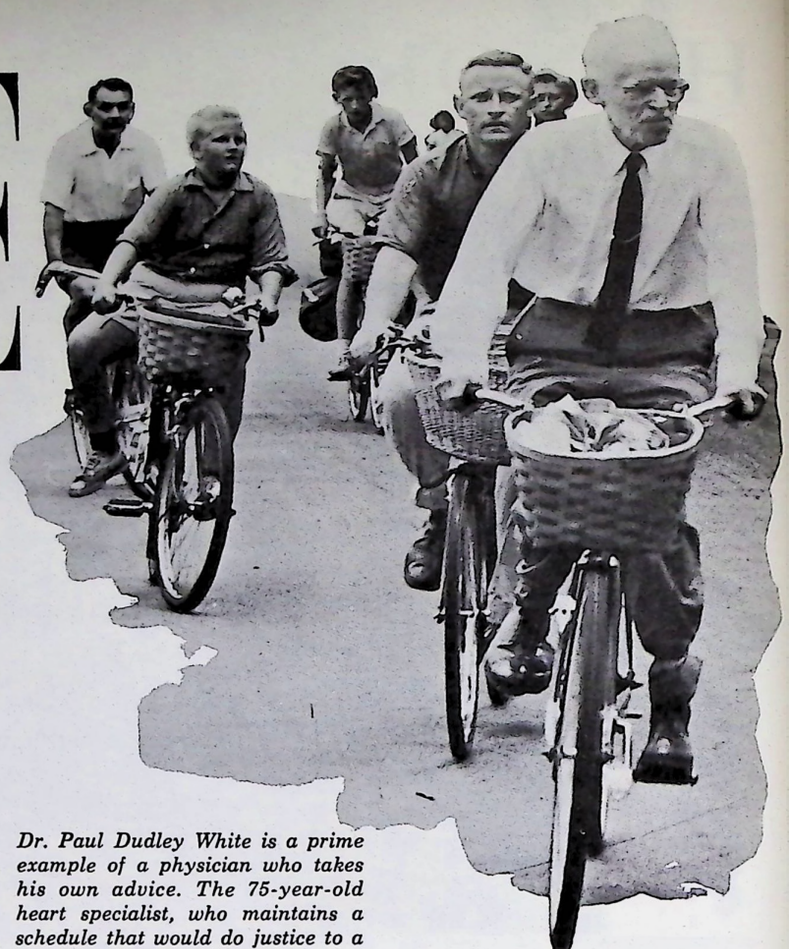
Portraits by Karsh of Ottawa

PHYSICAL FITNESS *and* LONG LIFE

How long will you live? Nobody knows, of course, but there are specific factors that tend to prolong life and others which subtract years from the normal life span — and all of us want to preserve life and prolong it. How you live today governs to a very marked degree how long you will live. You can live carelessly from day to day without regard for the future, you can become a veritable hypochondriac — or you can live sensibly and have a life of happiness and health that will be more satisfying and last far longer than the life that is either heedless or fearful.

In a very real sense, a person is as old as he thinks he is. The biggest trouble with many older people is that they are preoccupied with age. Instead of enjoying the present, they spend their time looking back over the years, regretting mistakes of the past, wishing for their lost youth and worrying about future illness and misfortune. The youthful old are those who become oblivious to the passage of time. They realize that life does not go on forever and yet are not dismayed by this knowledge, but are instead intent on squeezing the most out of each golden day. They have no time for regrets; they are jealous of their youth without clutching at it; they hold gracefully to it, refusing to accept the usual limitations of advancing age. These eternally young people are never bored. Each day is a gift! They have many interests, kind, warm hearts and alert, inquiring minds, vigorous bodies and a working philosophy for living that satisfies their need for a happy, fulfilled way of life. The person who has developed the habit of looking at life through glasses that are reasonably rose-tinted and who accepts each day without fear or worry, will undoubtedly lead a happier and more active life than the person with less optimistic attitudes — and he will live longer as well!

The human body, mind and spirit can weather abuse that a non-living machine could not tolerate, but battering and abuse leave their marks on both machine and body. Excessive weight, chronic fatigue, physical unfitness from lack of exercise, idleness, disease and accidents are among the primary causes of early aging.



Dr. Paul Dudley White is a prime example of a physician who takes his own advice. The 75-year-old heart specialist, who maintains a schedule that would do justice to a man half his age, not only advocates exercise, but believes that the first line of defense against heart disease is a healthy, well-nourished and physically active body.

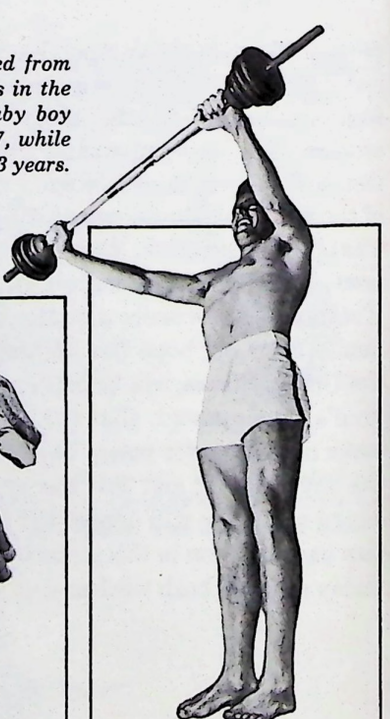
Life expectancy at birth has increased from 22 years in ancient Rome to 70 years in the United States today. The average baby boy born now may expect to live to be 67, while an infant girl has a life expectancy of 73 years.

22 YEARS
ROME, 50 B.C.

34 YEARS
NEW ENGLAND, 1750

42 YEARS
U. S., 1860

47 YEARS
U. S., 1900



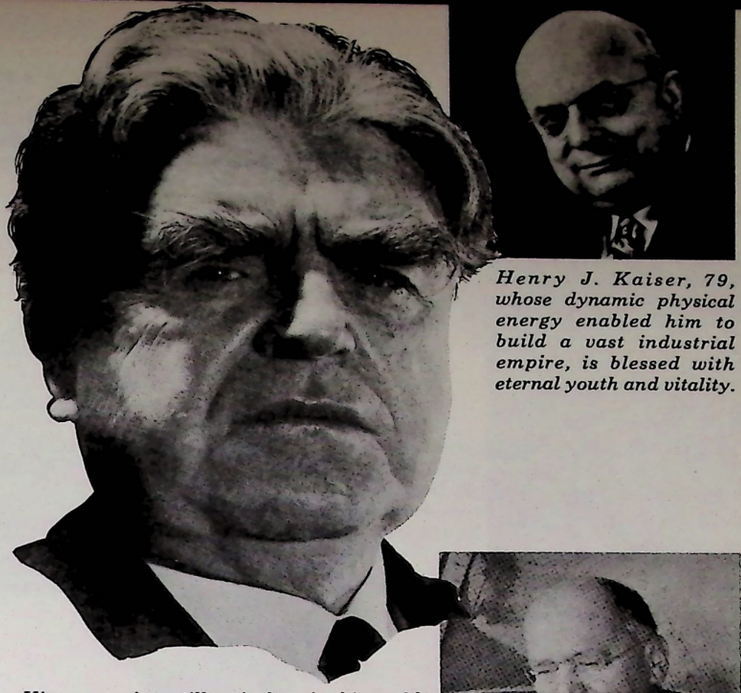
70 YEARS
U. S., TODAY

Muscular strength, which increases until a person is in the late twenties, declines from then on, although generally not to a very marked degree until the age of forty or even fifty. Lack of physical exercise, rather than any natural aging process, causes the muscles to weaken. Then the muscles, especially of the arms and shoulders, begin to lose their tone and the arms become weak and the shoulders drop. This deterioration starts a relentless pattern of aging that continues more rapidly with advancing years. In some cases it has been found that people who lacked regular exercise for several years had, by the age of fifty, lost over thirty per cent of their muscular strength. It is true that older people are no longer as strong, quick or sure in their movements. They do have great advantage over youth, however, in work that requires experience, judgment and the kind of skill that comes from long years of study and practice.

The ages at which people do their most prolific and best work varies considerably because people age at different rates of speed. A top scientist, artist or businessman is not likely to continue to work efficiently once disease begins to take its toll. On the other hand, a man who has cared for his body and aged slowly may still be going strong far beyond the age of seventy.

The average life span has expanded considerably over the centuries — from twenty-two years in ancient Rome to over seventy years in the United States today — and it is estimated that more than seventy out of a hundred people under the age of sixty-five today will live to seventy. Better sanitation, strict laws controlling the handling of food and the general use of pasteurized milk and pure water, are chiefly responsible for the tremendous drop in the number of deaths caused by diseases borne in impure water, milk and other foods, and modern medicines and medical treatment have virtually eliminated death from diseases caused by germs. The percentage of old people in the population today is, therefore, greater than ever before and, with the aid of science, will steadily increase in the coming years. About half of the deaths now occurring annually in the United States are among those past sixty-five. The relatively new sciences of geriatrics and gerontology, especially devoted to the diseases of the aged, are steadily advancing in the battle to prolong life in this age bracket. As a result of extensive research in this field, a number of reliable authorities, including the American Medical Association, have asserted that ages ranging from one hundred to one hundred and fifty are not incompatible with the constitution of the human body.

As medical research continues to provide mankind with more years of health by conquering disease, the practice of compulsory retirement at the age of sixty-five is gradually declining. Bernard Baruch, now over ninety, declares, "It seems to me wrong for people to retire, and worse to be compelled to retire at an arbitrary age, from work which



Henry J. Kaiser, 79, whose dynamic physical energy enabled him to build a vast industrial empire, is blessed with eternal youth and vitality.

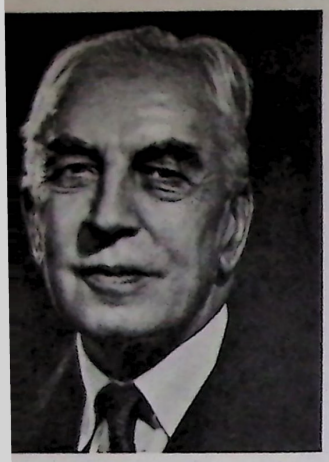
Vigorous voices still actively raised in molding public opinion are those of long-time labor leader John L. Lewis, 81, (above), and news commentator H. V. Kaltenborn, 83, (right).

Leading General Motors to great heights of achievement after the age of retirement are Alfred P. Sloan, Jr., 86, (left), and Charles E. Wilson, 71.

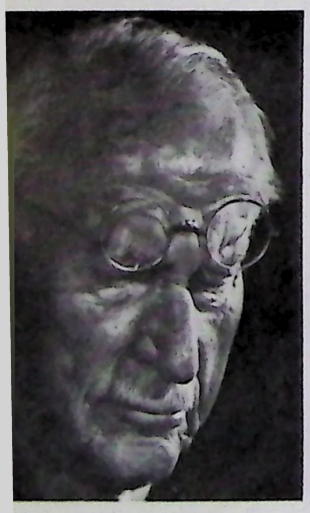
The ageless face and figure of lovely Gloria Swanson (left), certainly belie her 62 years, while the charm and vigor of Maurice Chevalier (center), 72, endear him to audiences today as always. Conductor Pierre Monteux, 86, (right), maintains that with exercise one gains strength and the ability to sustain physical effort and resist fatigue.

Harry S. Truman, 77, found that his ability to relax helped him to endure the rigorous demands of the Presidency. He and Sam Rayburn, 79, Speaker of the House, (right), believe that all who live by brain-work should get their daily "constitutional" for future years of health and longer life.

Robert Frost, 87, winner of 4 Pulitzer Prizes for poetry, avows that the man who in later life wholly neglects his body, is merely using the reserve powers which he developed in his youth; but the best brain power is found in the man who not only establishes a plan of physical activity in youth, but who maintains a regular exercise schedule throughout his adult life.



Exercise will not take an elderly person and make him a youth once more, but it will enable anyone, of whatever age, to use and increase the vitality he now has. At 65, the age long considered synonymous with retirement, Arnold J. Toynbee (top), 72, saw publication of his recent volumes of "A Study of History," and Chancellor Konrad Adenauer (second from top), at 85, continues to head the Federal Republic of Germany with great vigor.

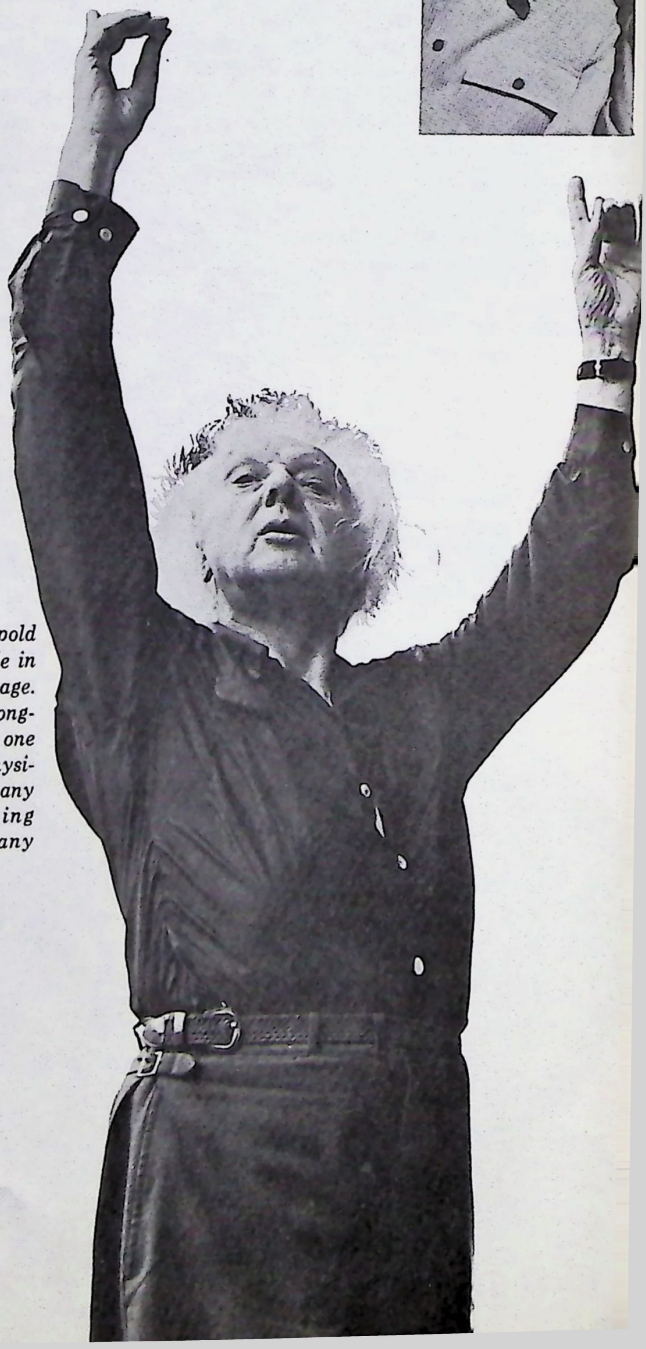


The tall, muscular world famous Swiss psychiatrist Carl Gustav Jung, 86, is still climbing mountains as he did in his youth. There are older persons who seem to improve their mental and physical work, if their health is good, with their years of knowledge and increasing wisdom. The splendid record of many elderly persons is very interesting, and shows that there is no age limit to mental perfection.

Young and old are often in a state of constant competition, but if there is one area in which the older person has been most successful, it is in the field of political leadership. India's Prime Minister Jawaharlal Nehru, a vigorous 72, plays tennis and always keeps in top physical condition so that he will have the strength and energy necessary to meet the vital problems facing his country of 400,000,000.

General Douglas MacArthur, now 81, was appointed supreme commander of all Allied Forces in the Southwest Pacific during World War II. Because of his robust health, he maintained his leadership until the end of the war. Today he functions as the vigorous executive head of Remington Rand.

Famed symphony orchestra conductor Leopold Stokowski, 74, is one of the 13,000,000 people in the United States today over 65 years of age. Conductors, as a group, seem to be especially long-lived, bearing out the theory that exercise is one of the factors conducive to longevity. The physical exertion involved in coordinating the many orchestral sections on split-second timing undoubtedly equals that expended in many athletic pursuits.



they enjoy and at which they could spend many more productive years. It seems to me to be both unfair and unwise to be reluctant, as we are, to employ older people. An older person can often do more in less time than his more physically spry junior. He has learned to pace himself. He knows the short cuts — and the pitfalls. He has acquired judgment and stability. For all this there is no substitute, not even youth."

Not all authorities agree with the venerable Mr. Baruch, however. Some people, in all probability, should never retire, but it is not true that men who retire early always die early. The men who die before their time are, in fact, usually the ones who work hard long after they should have retired. Age alone should not be the determining factor in retirement.

Scientific studies show that none of the people who have lived to a ripe old age have been idle; laziness and idleness are enemies of health and longevity. Practically all centenarians have led active lives, most often doing work which involved a good deal of physical labor and their average age at retirement was eighty. The secret of successful retirement is in preparing for it — financially, physically and psychologically. Substitutes for work must be found long before retirement in order for the leisure years to be successful. Retirement with the idea of doing nothing is disastrous, for nature has a tendency to eliminate what is useless.

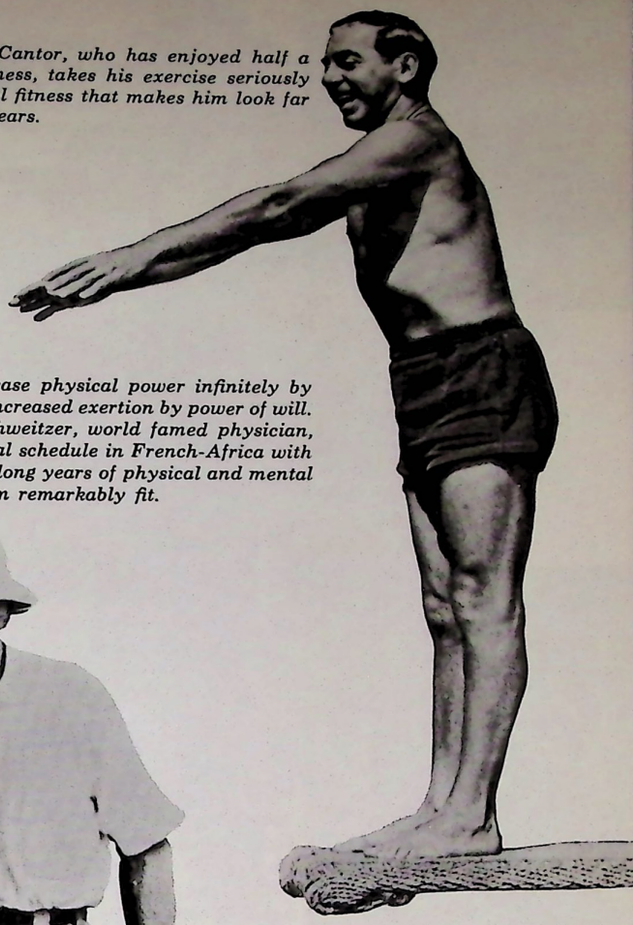
Longevity tends to run in families, for inheritance plays a part in determining the life span. Every individual's characteristics are inherited from his parents through his genes, which are the factors that govern heredity. It is quite certain that no single gene or even a small number of genes controls length of life, but it seems that a person can inherit genes for a rugged or weak heart, a resistance to lung diseases and cancer or a lack of resistance and the same is true of other diseases. But it is quite certain that, whatever kind of basic physical characteristics a person inherits, a great deal depends on his way of life. It has been noted that the faster the pace of living, the shorter the duration of life. Most long-lived people have happy, peaceful home lives. They are of a placid, happy disposition, not given to worrying or rushing and, as a whole, they take life at a calm, even, unhurried pace.

There are many things you can easily do to help prolong your life beyond the normal expectation. Both mind and body need to be kept active and flexible. Specialists in geriatrics and in heart disease — the number one cause of death today — are convinced that keeping the muscles active after forty is a practical way of delaying age, for good general health goes with well-toned muscles. People who have maintained a regular physical fitness program continuously from their early thirties have some advantage over those who do not start until they are fifty or sixty, but it is quite possible to start exercising in the sixties, seventies or even eighties. By beginning easily, making exercise a regular daily habit and adding to the time and strenuousness of the exertions, muscle tone and fitness improve. The person who maintains a regular exercise program at eighty is generally in better physical condition than the person of sixty who has not had any exercise in years.

Insurance company statistics point out that excessive use of alcohol is another shortener of life, while also disclosing that people with life insurance live longer than persons without it and those with annuities longer yet, suggesting that the peace of mind resulting from financial security aids in prolonging life. Diet also plays an important part in health and, thus, in longevity. A light balanced diet of plain food that maintains the proper weight level without the insidious addition of poundage is vital. Statistics prove that you will live longer if you are underweight — the lowest mortality rate for both men and women at ages over thirty is found among those who are fifteen to twenty pounds below average weight.

Health, then, is the key controllable factor in longevity and health is more than the mere absence of disease. It is a feeling of well-being that embraces a sense of reserve power and is attained by attention to, but not preoccupation with, the fundamentals of living — food, sleep, exercise, recreation, work, wholesome thinking and good medical care. This attention should begin now, for it is never too early or too late to start to add years to our lives.

In the United States today, there are over fifteen million senior citizens of sixty-five years of age or more — twenty-nine thousand of whom are ninety-five or older. This constantly increasing segment of the population, along with everyone else, can look forward to more years of work, travel, recreation, good health and enjoyment than ever before — even at sixty-five and older — for the future looks brighter than at any other time in history. No one should regret growing old; it is a privilege still denied to many. ♦



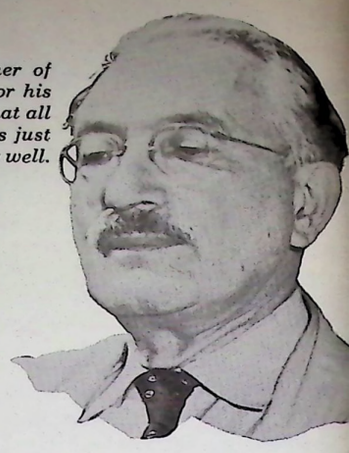
Humanitarian Eddie Cantor, who has enjoyed half a century in show business, takes his exercise seriously and exhibits a physical fitness that makes him look far younger than his 69 years.

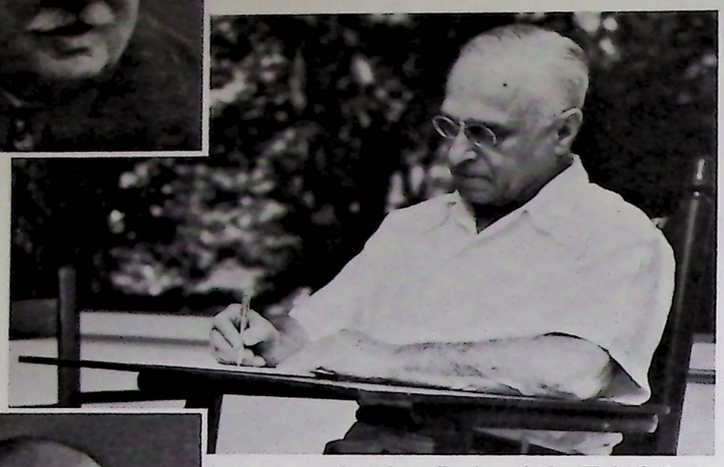
It is possible to increase physical power infinitely by spurring the body to increased exertion by power of will. At 86, Dr. Albert Schweitzer, world famed physician, meets his busy hospital schedule in French-Africa with zest. The demands of long years of physical and mental activity have kept him remarkably fit.

Helen Keller, 81, who enjoys walking, fishing and hunting, has been an inspiration to the entire world as a result of her indomitable success in breaking barriers of human limitations. She believes that only by a proper degree of physical activity can woman develop her full possibilities in personality.

Roscoe Pound, 90, Dean Emeritus of Harvard Law School, took long bicycle trips in his youth, boxed, wrestled and has walked thousands of miles — through Scotland, Ireland and France.

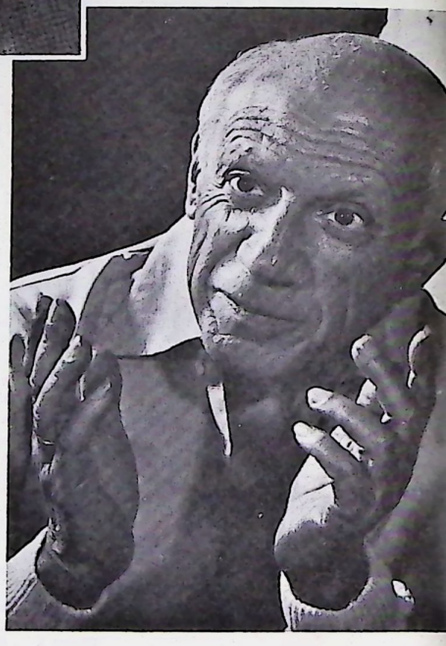
Dr. Selman A. Waksman, 73, winner of the 1952 Nobel Prize for medicine for his discovery of streptomycin, believes that all the exercise needed by a busy man is just that amount which will keep the body well.





Associate Justice of the United States Supreme Court, Felix Frankfurter, spry at 78, asserts that exercise makes one's life happier, stronger and more efficient.

Novelist Edna Ferber, 70, believes that idleness, lack of interest and worry tend to cause old age.



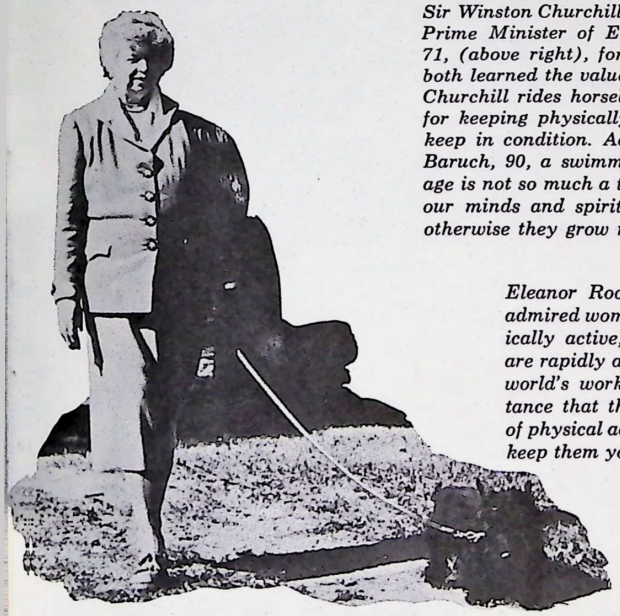
Vigorous 79-year-old composer Igor Stravinsky maintains that to attain the highest human perfection, man must always bring to his chosen task a healthy body — a body kept in the best possible condition.

It is by physical vigor that youth is sustained. Pablo Picasso, incredibly vigorous and hard working at 80, demonstrates that old age has no terrors for those who are in perfect physical and mental health.

Comedians Jack Benny, 67, (left), and George Burns, 55, (right), with a combined total of 88 years in show business, know the value of physical fitness. They find that nothing is so well calculated to afford fresh vigor to the mind as exercise.

After more than 60 years as a piano virtuoso, Artur Rubinstein, 72, continues to breathe new vitality into the works of the masters with a youthful vigor and zest for living. He finds long walks physically relaxing after strenuous hours at the piano keyboard during his demanding concert schedules.

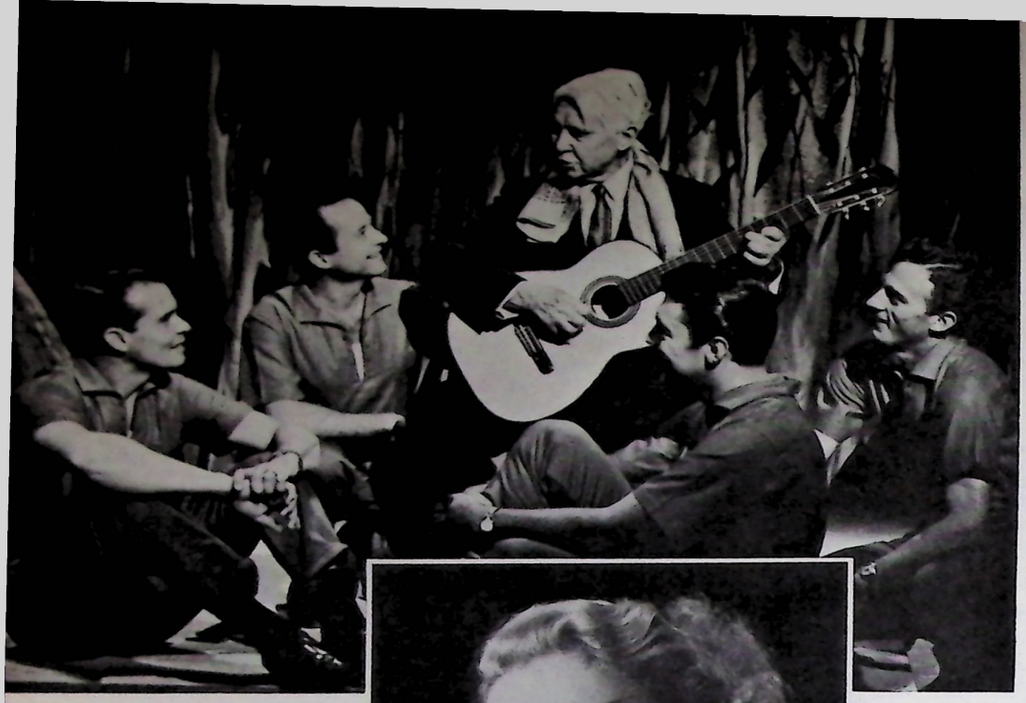
Sir Winston Churchill, 86, (above left and far right), former Prime Minister of England, and Dwight D. Eisenhower, 71, (above right), former President of the United States, both learned the value of exercise during their army years. Churchill rides horseback as a regular part of his routine for keeping physically fit, while Eisenhower plays golf to keep in condition. According to elder statesman Bernard Baruch, 90, a swimming enthusiast, (above center), "Old age is not so much a time of life as a state of mind; to keep our minds and spirits young we must keep them active, otherwise they grow moribund."



Eleanor Roosevelt, 76, the world's most admired woman and one of the most physically active, states that because women are rapidly assuming a larger share of the world's work, it is of paramount importance that they maintain a daily routine of physical activity and exercise which will keep them youthful and give them energy.

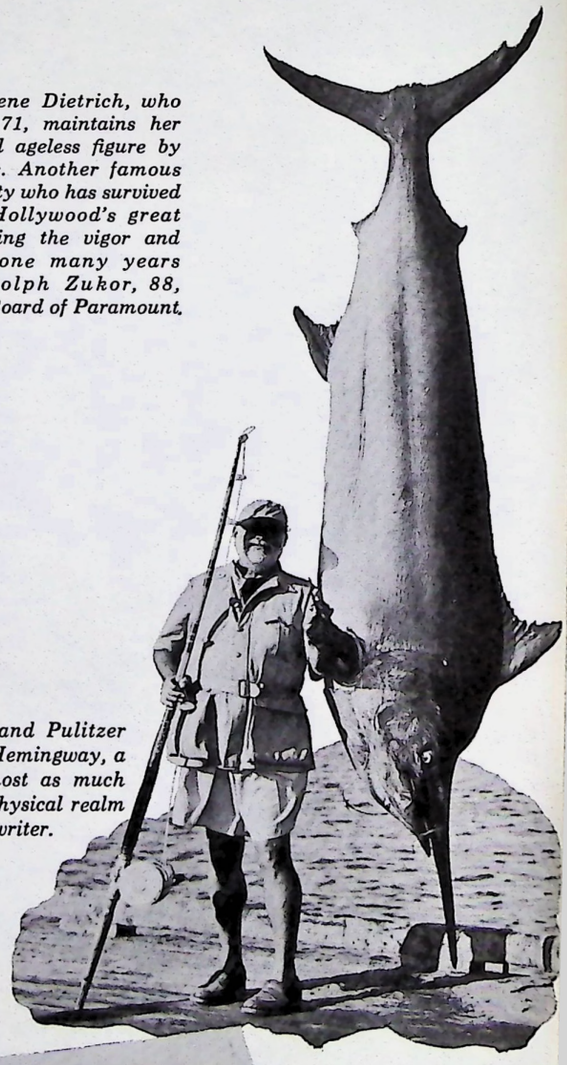
Author Pearl Buck, 69, whose writing has won both the Nobel and Pulitzer Prizes, contends that exercise is food for the body as well as for the spirit. She believes that physical activity engenders the joy of living, well-being and health, while idleness, on the other hand, brings about bodily debility.

Premier David Ben-Gurion, 74, (left), dominant figure in the history of modern Israel, stresses the necessity of vigorous physical exercise to maintain health and strength. Beauty Scientist Helena Rubinstein, 80, (right), is a pioneer in advocating exercise for beautiful, youthful bodies.

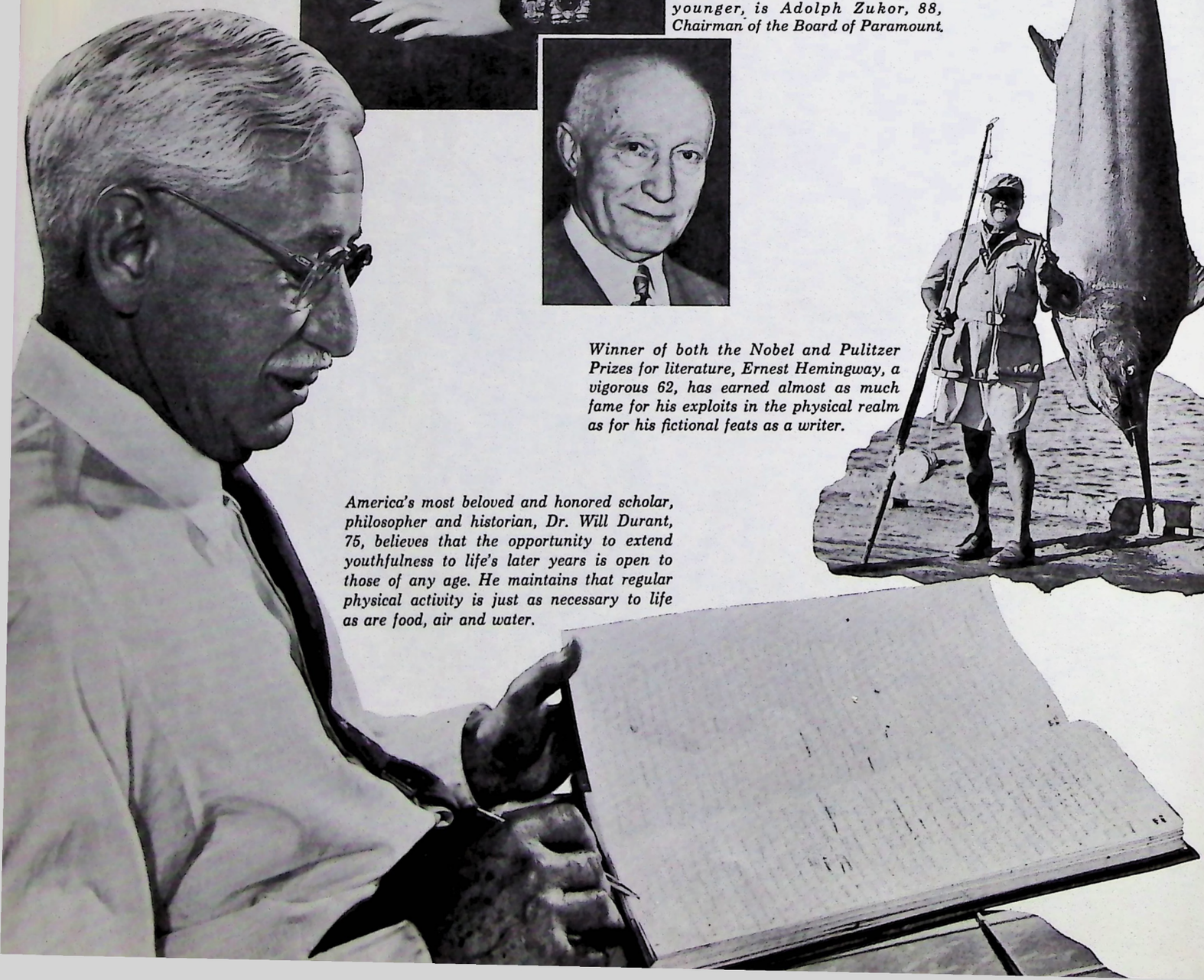


Biographer-Poet-Historian Carl Sandburg, 83, (left), proves that advancing years do not create an insurmountable barrier to maintaining youth. He attributes his vitality to daily calisthenics and long walks, which he feels tend to preserve not only the external appearance of youth but the internal stimulus of youth. Another zestful 83-year-old who enjoys life and derives great satisfaction from literary work, and inspiration from religious service to others, is Dr. Harry Emerson Fosdick(above), Minister Emeritus of the Riverside Church, New York.

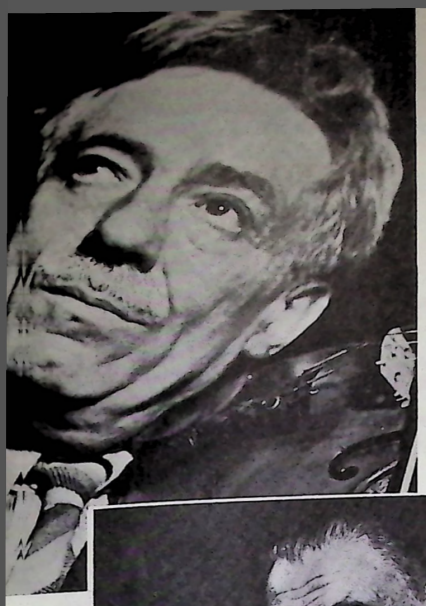
Glamorous Marlene Dietrich, who admits to being 71, maintains her fabulous face and ageless figure by vigorous exercise. Another famous filmdom personality who has survived generations of Hollywood's great while still retaining the vigor and appearance of one many years younger, is Adolph Zukor, 88, Chairman of the Board of Paramount.



Winner of both the Nobel and Pulitzer Prizes for literature, Ernest Hemingway, a vigorous 62, has earned almost as much fame for his exploits in the physical realm as for his fictional feats as a writer.

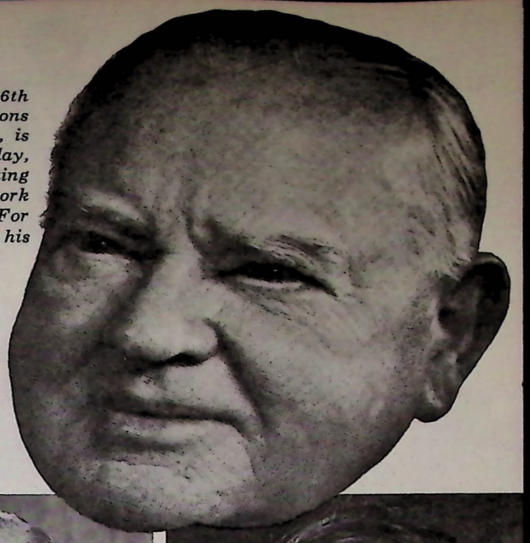


America's most beloved and honored scholar, philosopher and historian, Dr. Will Durant, 75, believes that the opportunity to extend youthfulness to life's later years is open to those of any age. He maintains that regular physical activity is just as necessary to life as are food, air and water.

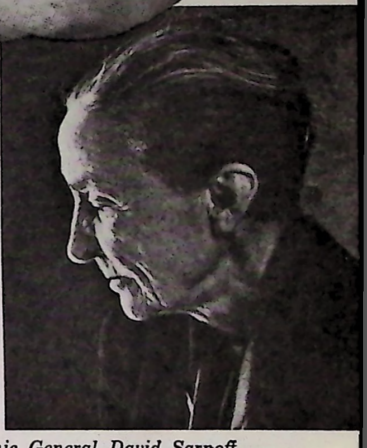


The age at which a person becomes old is an individual matter. Some people seem old at 40, while others retain a youthful outlook on life even after the age of 80. Violinist Fritz Kreisler, 86, still retains the charm, wit and physical facility for which he was noted before his retirement from the concert stage.

Herbert Hoover, who, on his 86th birthday, advised elderly persons to keep busy after retirement, is currently working 10 hours a day, sometimes 7 days a week, writing a 1,600,000 word, 4-volume work called "An American Epic." For physical fitness, he spends his "spare" time fishing.



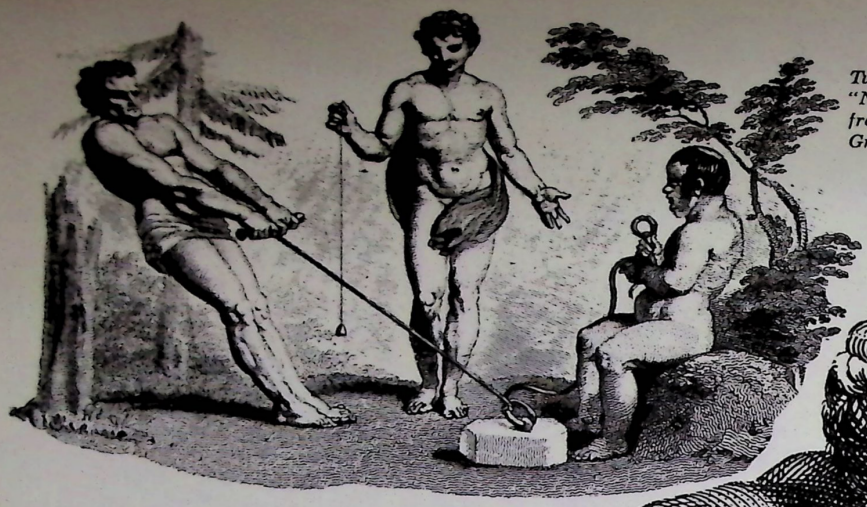
British men of letters who are enjoying long and fruitful lives include popular novelist Somerset Maugham, 87, (left), and irrepressible, voluble mathematician, philosopher and author Bertrand Russell, 89, (right), winner of the Nobel Prize for literature.



Still going strong at 70, dynamic General David Sarnoff continues to brilliantly head the giant Radio Corporation of America as Chairman of the Board. Georgia O'Keefe, 74, (right), eminent American artist, believes that youthfulness of body and spirit cannot be retained without activity.

Motion picture actor Cary Grant, who is today Hollywood's greatest and most successful screen star, takes excellent care of himself because it pleases him to stay youthful at a mature age. At 57 he exercises vigorously every day, in order to keep his famous body in perfect condition for the tremendous physical demands of motion picture work. He believes that it is a fallacy to think that sufficient exercise to maintain youthfulness, vitality and good health can be taken sporadically – once a week, or once a month.

Laziness and idleness are enemies of health and longevity. The people who live beyond the usual span of life are those who have continued to work hard at their professions and to be physically and mentally active, as have motion picture producer Samuel Goldwyn, 79, (left), and composer Irving Berlin, 73.



Twenty-three centuries ago, Hippocrates proclaimed: "Nature is the curer of diseases." We can learn much from the Ancients. Physically and intellectually, the Greeks have never been surpassed. —TANNY

a History of PHYSICAL EDUCATION

Greek girls participated in various forms of exercise, especially in Sparta, where it was a prominent part of their early training.

PHYSICAL education is one of the newest subjects in the modern educational program. At the same time, it is the oldest of all forms of education. Physical training has always been fashioned to the culture of the people and of the age.

Historically, some form of physical education has been practiced by all races and nations. It has been used to develop physical fitness and skills for war; to prepare and stage religious rites, group festivals, and athletic competitions; to direct the play of children; to provide recreation for adults and to treat disease. As early as 2500 B.C., exercises were used by the Chinese as aids in overcoming disease and prolonging life. Sports were also practiced to some extent by the Assyrians, Babylonians, Egyptians and especially the Persians. Persia, under Cyrus, believed education should be both moral and physical. Boys were selected for military training at the age of six and trained in rigorous activities. The people of India subjugated the body in order to elevate the soul.

It was Greece, however, which developed physical education to a higher degree than any other nation. During the Homeric age, athletic contests were widely held and both men and women participated to some extent in various forms of physical education. The word "gymnasium" originally meant "a school for naked exercise," an institution of the ancient Greeks who, however, generally restricted such public practice to males over eighteen years of age. Every important Greek city, whether in the homeland or in colonies throughout the ancient world, contained at least one gymnasium — Athens had three — managed by one or more magistrates, who supervised professional instruction of the youth in athletic exercises, of which boxing, hurling the discus and the javelin, jumping, riding, running, playing various ball games and wrestling, were featured. Such installations, adorned with paintings and statues of deities and heroes, contained spacious grounds comprising locker rooms, dusting rooms where athletes powdered themselves before exercise, baths, areas for contests, colonnades for spectators to watch the players and even lecture halls where literature and philosophy were discussed.

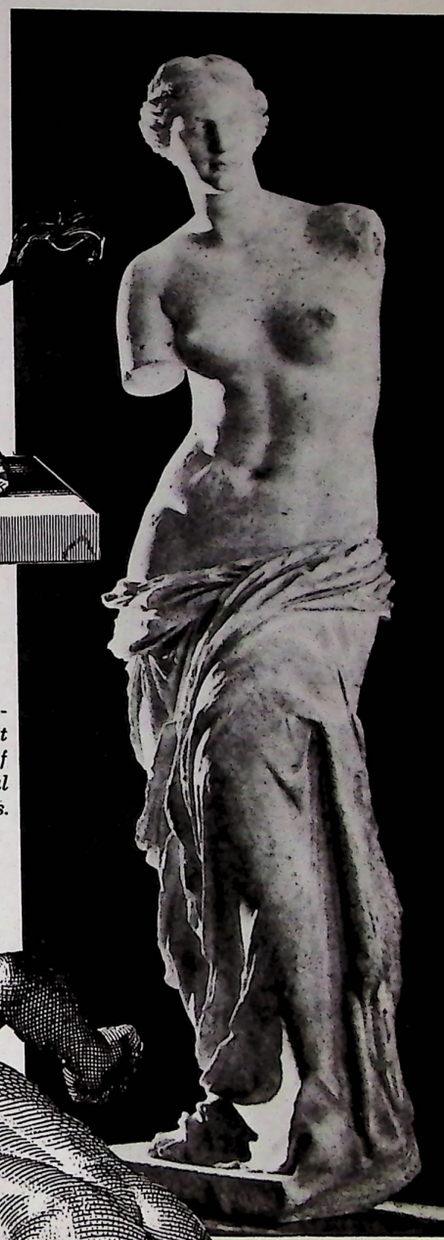
Competitive athletic sports played such an important part in the life of the Greeks, both socially and nationally, that the gymnasium was of great significance and the state not only built the structures but provided the officials for supervising them. The Greeks also used the gymnasium for town meetings and it was in these institutions that the leading philosophers and intellectuals of the day gathered. As the arts developed, the gymnasium assumed a corresponding importance in this field. Different schools of philosophy were connected with different gymnasiums; in Athens, for example, Plato taught at what was known as the *Academy,* while Aristotle lectured in the so-called *Lyceum.* Writers of ancient medical works discovered that physical exercise improved the health and that special exercises were helpful in the cure of various diseases and disabilities, all of which enhanced the importance of the gymnasium.

In the field of gymnastics, physical training first consisted of feats of strength, according to the individual's own ideas of what was beneficial. Later, the Greeks collected all of these ideas of physical exercise and formed them into a system of training which became an important part of general education. The early Greeks spent as much time on gymnastics and athletics as they did on music and art. Physical training played a part in medicine, but even before the time of Hippocrates, Greek physician and father of medicine, it was prescribed to counteract the ill effects of luxurious living. Theoretically, early Greek physical training was based on the premise that, within limits, the human body can increase in size, strength and aptitude in proportion to the use made of it and gymnastics, therefore, sought to exercise all parts of the human body. The Greeks also believed that general physical development improved the coordination of mind and body.

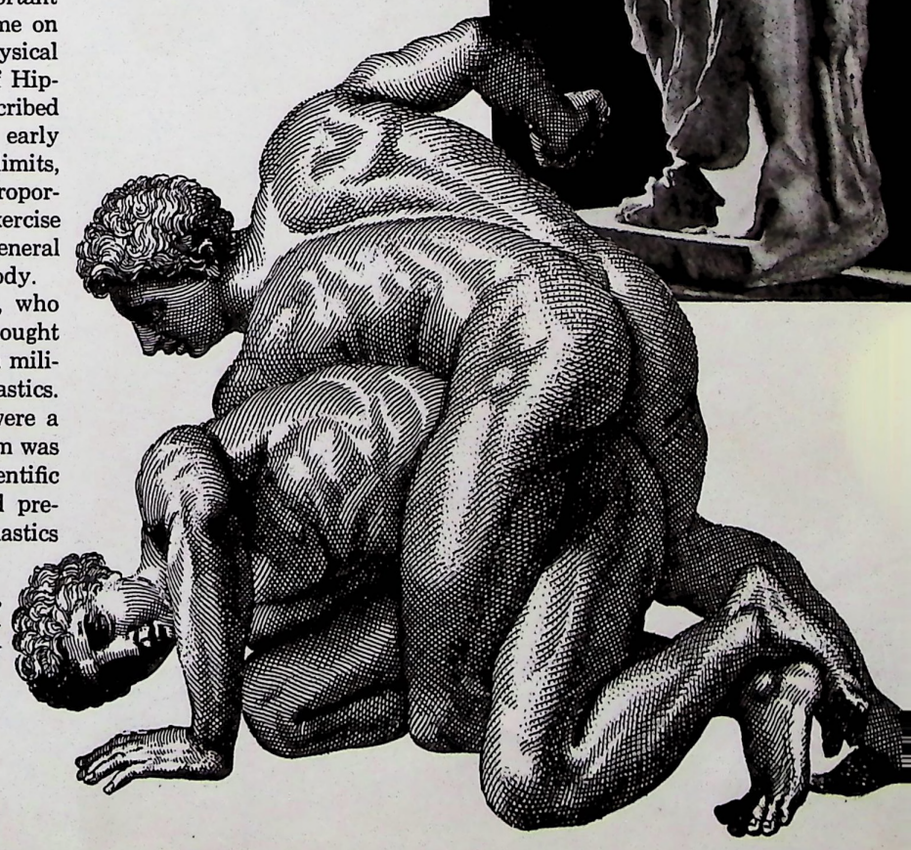
The gymnasium never became popular with the Romans, who regarded the training of boys in gymnastics with contempt and thought it conducive to idleness and immorality and of little use from a military point of view. They substituted military camp life for gymnastics. While the Greeks were of a participant nature, the Romans were a spectacle-loving race; yet, under Nero, the first public gymnasium was erected in Rome. For a time the Romans gave thought to scientific physical exercise and built even larger gymnasiums than had previously been known, but aside from recognizing the value of gymnastics

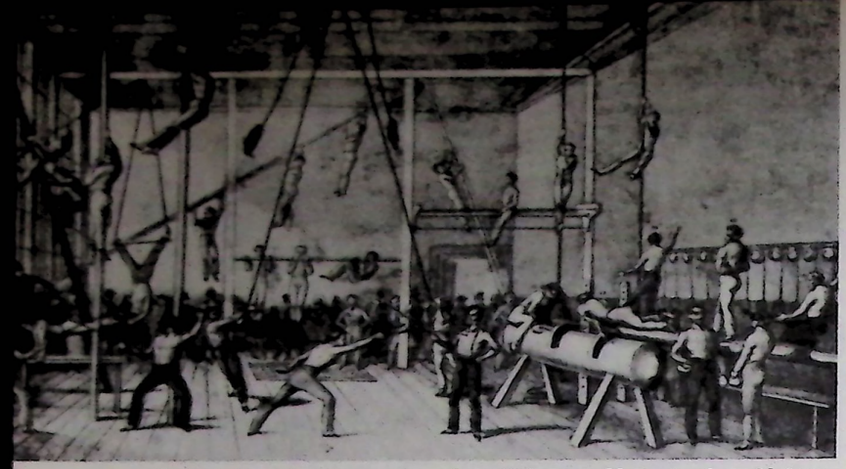
To judge by the portrait statues which have come down to us, the Greeks had developed the art and science of health-building and race-building to the highest perfection.—TANNY

The mythological Hercules epitomized Greek glorification of physical prowess. He wears the skin of the Nemean lion which he killed and is holding the world so Atlas can steal the apples of the Hesperides for him.



The goddess of love was the most beautiful of all the goddesses of ancient mythology and the exquisite Venus of Milo is delineated as the strong physical type of beauty admired by the Greeks.





Today's luxurious gymnasiums bear little resemblance to the cold, barn-like structures of the early 19th Century, when this lithograph was made.

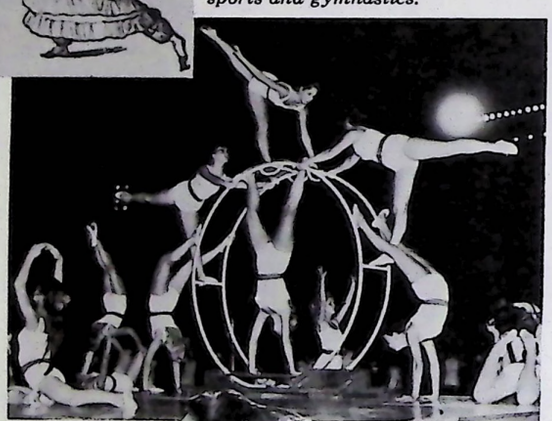
as a mild preparation for war, they were never seriously interested. The Romans' aim in education was to develop the good citizen skilled in oratory; they lacked the intense love of physical competition.

The Dark Ages nearly obliterated physical education. However, with the coming of the age of chivalry and its knightly sports of horseback riding, jousting with spears, swordplay, boxing, wrestling, swimming and archery, physical education revived and steadily became stronger. The humanistic philosophies of the Sixteenth, Seventeenth and Eighteenth Centuries stimulated the revival of wholesome physical activity as a part of education. With and following the Renaissance, many men contributed to physical education through their teaching and writings. Among these were François Rabelais, John Milton, Michel de Montaigne, John Locke and Jean Jacques Rousseau.

Friedrich Ludwig Jahn developed Germany's contribution to physical education activities, which included exercises on high and low horizontal bars, parallel bars, swinging rings and mats. Pehr Henrik Ling was responsible for Sweden's major contributions, which included a system of free arm, leg and trunk movements known as "calisthenic exercises" and a comprehensive system of treating physical disorders by means of specific active and passive movements, called "medical gymnastics." From these developed the Swedish massage and some of the mechanical manipulation phases of physical therapy. The British Isles contributed soccer, field hockey, cricket, rugby football and many other vigorous sports. They also enriched physical education with the philosophy that the playing and enjoyment of a game is as important as winning. The English and Welsh also added much to the techniques of archery.

In the United States, school programs in physical education began first in the colleges, then in the high schools and finally in the elementary schools. Early leaders in physical education in the United States were the German refugees Charles Follen, Charles Beck and Francis Lieber, who introduced the German gymnastic system in 1824. Swedish school gymnastics were introduced in Boston, Washington, D. C. and New York, the University of Utah, Columbia University and Wellesley College. Dio Lewis and his "new gymnastics for all" included calisthenics, dumbbells, wands and Indian club drill, all set to music. He established the first teacher training school in Boston in 1861, one year after the first college department of physical education was started at Amherst College. In 1861 Dr. Edward Hitchcock, on being appointed to the Amherst faculty, was given responsibility for the

Unhampered by bulky clothing and restricting theories about the advisability of any kind of strenuous exercise for women, modern day physical education finds women actively involved in a variety of sports and gymnastics.



Automobiles have almost entirely replaced bicycles for adults in the years since 1895, although cycling is still an excellent means of maintaining good muscle tone while enjoying fresh air, sunshine and scenery.

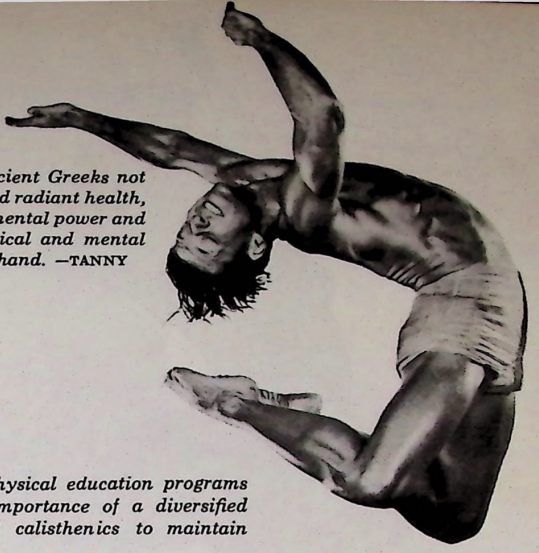
The high-wheeled bicycles of the late 19th Century afforded exercise and release from city life.

health of the students and for their organization into classes for exercise. He advocated vigorous, recreative exercises with light wooden dumbbells for "cleanliness of the skin, attention to stomach and bowels and relaxation from mental strain." Intramural games were promoted, but "hot and violent contests with professional gamesters" were as yet denounced. Corrective exercises were included for those who needed them.

Gymnasiums were built at Amherst, Harvard and Yale in 1860, but these buildings were only used voluntarily, chiefly by students on club teams. Many years passed before regular physical education classes were required by most colleges. During the next twenty-five years, there was a wave of gymnasium building throughout the country. The buildings, roughly following the same pattern, each consisted of one large hall for mass gymnastic participation. In this hall, rings, ladders and ropes were hung and around the edge were placed bars, horses, pulley weights and other developmental and corrective apparatus.

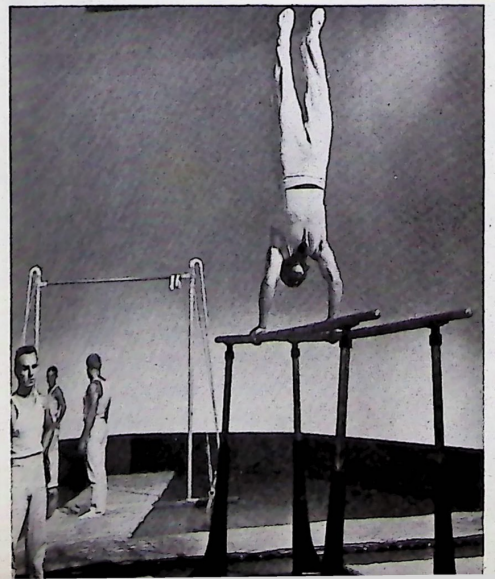
Following the lead of the colleges, school athletics began to dominate the lives of schoolboys outside the classroom. First, city public school athletic leagues were formed to promote and regulate conditions for interschool competition. Then state associations were formed in practically all states to assist these athletic leagues. In 1923, the National Federation of State High School Athletic Associations began to supervise the problem of interstate contests and to promote national tournaments. As early as 1892, Ohio had passed a law governing physical education on a state-wide basis. Within the next forty years, thirty-five states had passed physical education laws and state directors were appointed to supervise the provisions of these laws.

During the more than four-thousand year history of physical education, almost every age and race has agreed on its importance, although the emphasis has varied in degree and kind of exercise. In the United States today a well-rounded program of instructional, intramural and interscholastic athletics is considered the ideal. It is designed to maintain the fitness of the student and develop in him an interest in exercise which will carry over into adult life. It is a goal worthy of a health-conscious nation. ♦



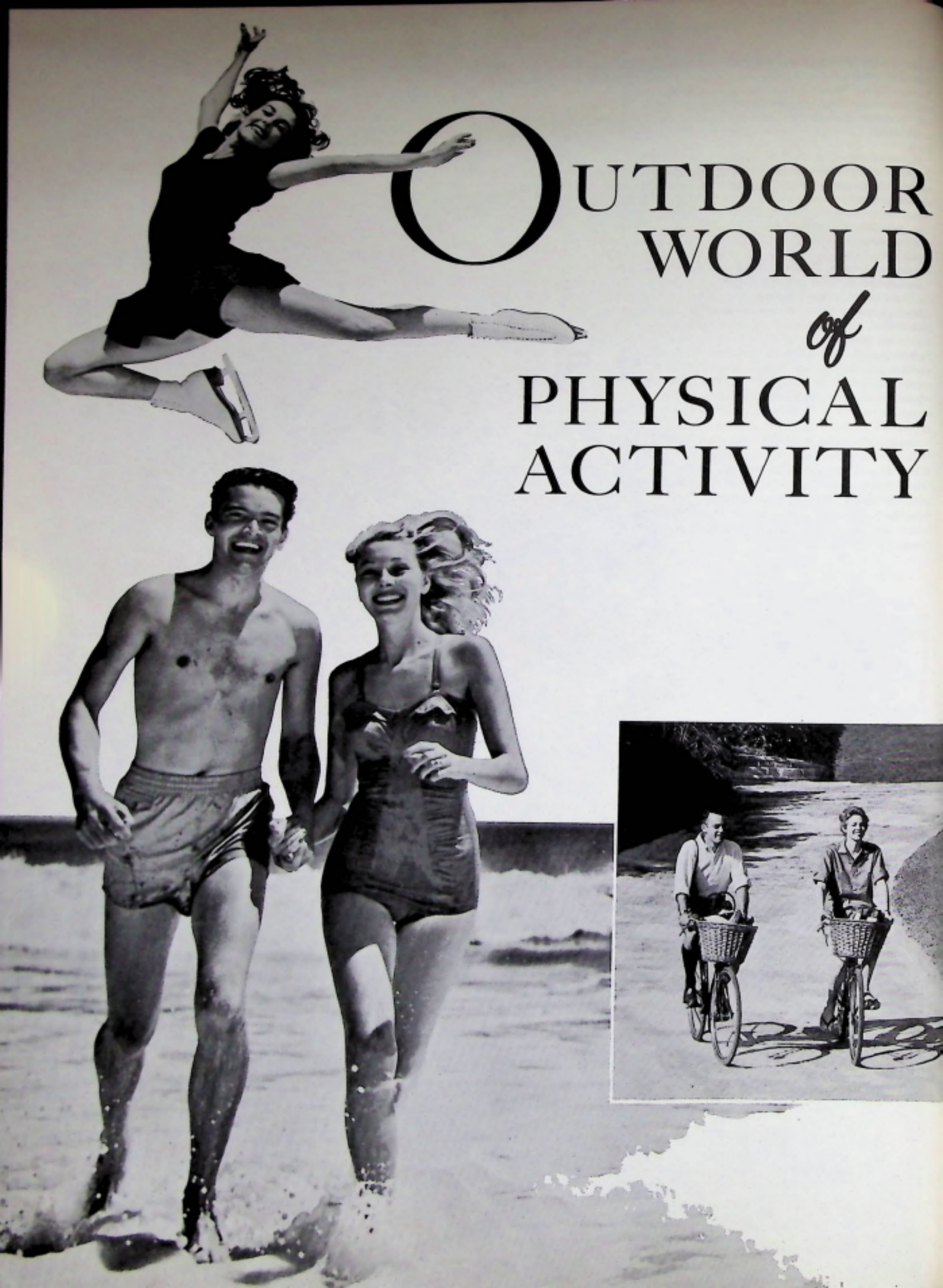
We may emulate the ancient Greeks not only in beauty of form and radiant health, but also in physical and mental power and artistic genius, for physical and mental development go hand in hand. —TANNY

Since World War II, physical education programs have emphasized the importance of a diversified schedule of sports and calisthenics to maintain optimum fitness.



It cannot be doubted that healthy and vigorous people often overcome most of the ordinary diseases of civilization. A healthy and wholesomely kept body is the best defense against the vast majority of diseases which cripple and destroy us.

—TANNY



OUTDOOR WORLD *of* PHYSICAL ACTIVITY

Miracles can be performed by nature and are performed by her every day. The laboratory of nature is far more wonderful than the laboratory of science. Nature remains "the curer of diseases" and the giver of health to those who obey her.—TANNY

TO EARLIEST man, the outdoor world of physical activity was his daily workshop. In contending for survival, he ran, jumped, climbed, hunted, fought, crawled with the crocodile and outfoxed the fox. As time went by, he organized some of these pursuits in the form of sports and games as a mode of *recreation,* though often these programs had other motives, such as training for combat and tribal morés. For example, bride racing (the bride going to the fleetest runner) abounds in early history and in primitive lands in later times.

Apart from such instances, there is substantial evidence that the recreational motive is deep-rooted in sports as well as other forms of outdoor activity; even animals manifest recreational behavior, recognizable as playfulness. This leads to the scientific inference that, by nature's law, man does not live by work alone. He must also play, which is another way of saying he must relax. The outdoor world of physical activity is his age-old arena for relaxation, whether by participation in sports or games, or merely the joy of exposure to sun, fresh air, or stimulating scenery.

In our own modern world, gaited to a tempo and conditions which induce tension and anxiety, there is healing ointment in field and stream, mountain trail and desert terrain, golf course and tennis court, recreational park and playground. There are, however, penalties as well as dividends in these outlets, for the sudden shift from relatively little physical activity during the work week to an intensified overdose of strenuous exercise over weekend or holiday, is fraught with dire consequences. Medical science has long recognized that exercise—concededly a natural road to health—should be regular and not spasmodic. Irregular exercise—especially when it is strenuous—puts a sudden strain on the heart, thus defeating the very purpose it is intended to achieve. The average individual in our society is rarely a product of progressive physical conditioning and his abrupt weekend plunge into excessive exercise constitutes a gamble, not only with his health but his very life.

Thus, the life-giving force of the outdoor world of physical activity can be turned into its opposite. Moreover, apart from the detrimental factor of excess, the choice of physical activity is intrinsically important. It must be suitable, both in kind and degree, to the particular participant. Equally important is the progressive amount of exercise as a suitable norm for the body. How is the layman to know? Obviously, competent advice is called for, and wisdom is shown in consulting a doctor or physical educator. The average woman's skeleton being slighter and her muscle system weaker than man's, her exercises should be correspondingly lighter. Just how much lighter? Here again, each case differs, and a physical educator or gym instructor would be most competent to judge.

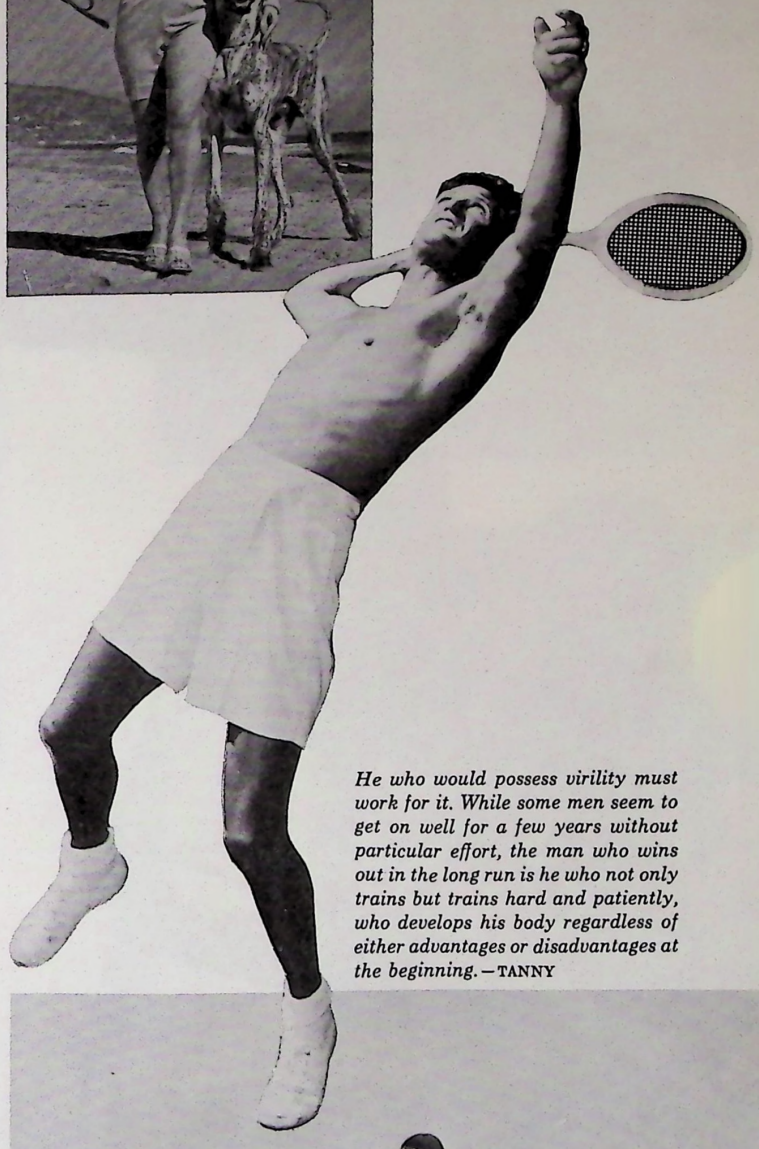
Man and woman were made to work. Properly implemented, the human body can perform more effective work with its given energy than any machine ever devised. The combined strength of all the groups of muscles in the average body is equal to lifting about six thousand pounds. The body's indispensable resource to keep itself effectively operating is regular physical activity.

The benefits of physical activity, outdoor or indoor, have been voiced by great thinkers through the ages, like a forensic fugue. Plato fostered "a sound mind in a sound body"; Aristotle taught that "the education of the body must precede that of the intellect," for without a sound body the intellect has a poor residence. Hippocrates, the father of medicine, advised his patients to take exercises in gymnasiums as a means of recovering from ills and weaknesses. John Locke, whose thinking paved the way to our nation's "Declaration of Independence," said that the first aim of education should be "vigor of body"; Kant emphasized the disciplinary value of physical education.

In our own time, President Kennedy has proclaimed the need of a renaissance of physical fitness in a nation gone soft. "We want," he said, "a nation of participants in the vigorous life." America's growing health decline is due to prolonged fatigue build-up. Fatigue more often results from a mental or emotional condition than from physical exertion. The perfect prescription for fatigue is exercise.

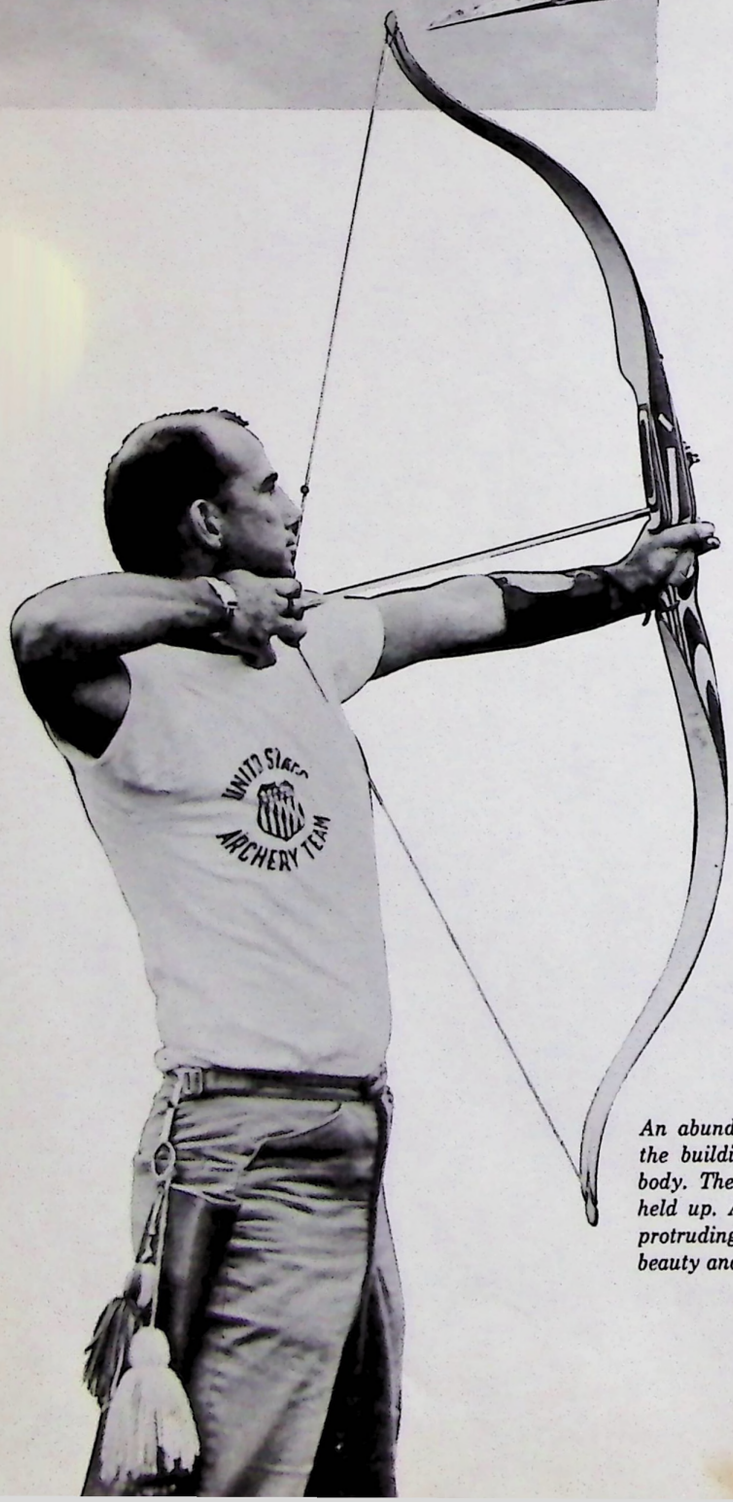
You have no time to exercise? In truth, you have no time to omit exercise, for if you do, you may be forced to give up a great deal more time for illness and disability. The world of physical activity, outdoor or indoor, can add years to your life and life to your years. ♦

Not one woman in a dozen is erect, whether walking, standing, or sitting. Nearly every head is pitched somewhat forward. The arms are held still and there is a lack of spring and elasticity of movement. Fresh, blooming complexions are rare.—TANNY



He who would possess virility must work for it. While some men seem to get on well for a few years without particular effort, the man who wins out in the long run is he who not only trains but trains hard and patiently, who develops his body regardless of either advantages or disadvantages at the beginning.—TANNY

In the physical life of man, activity results in development and inactivity in stagnation and retrogression. The present-day custom of sitting in the grandstand while two teams of five, nine, or eleven men get all the exercise is an unfortunate and even dangerous tendency. Reading the sporting page and yelling one's self hoarse in the bleachers, may be enjoyable, but these customs will never produce a nation of vigorous men. Exercise is found, not in the grandstand, but on the field. —TANNY



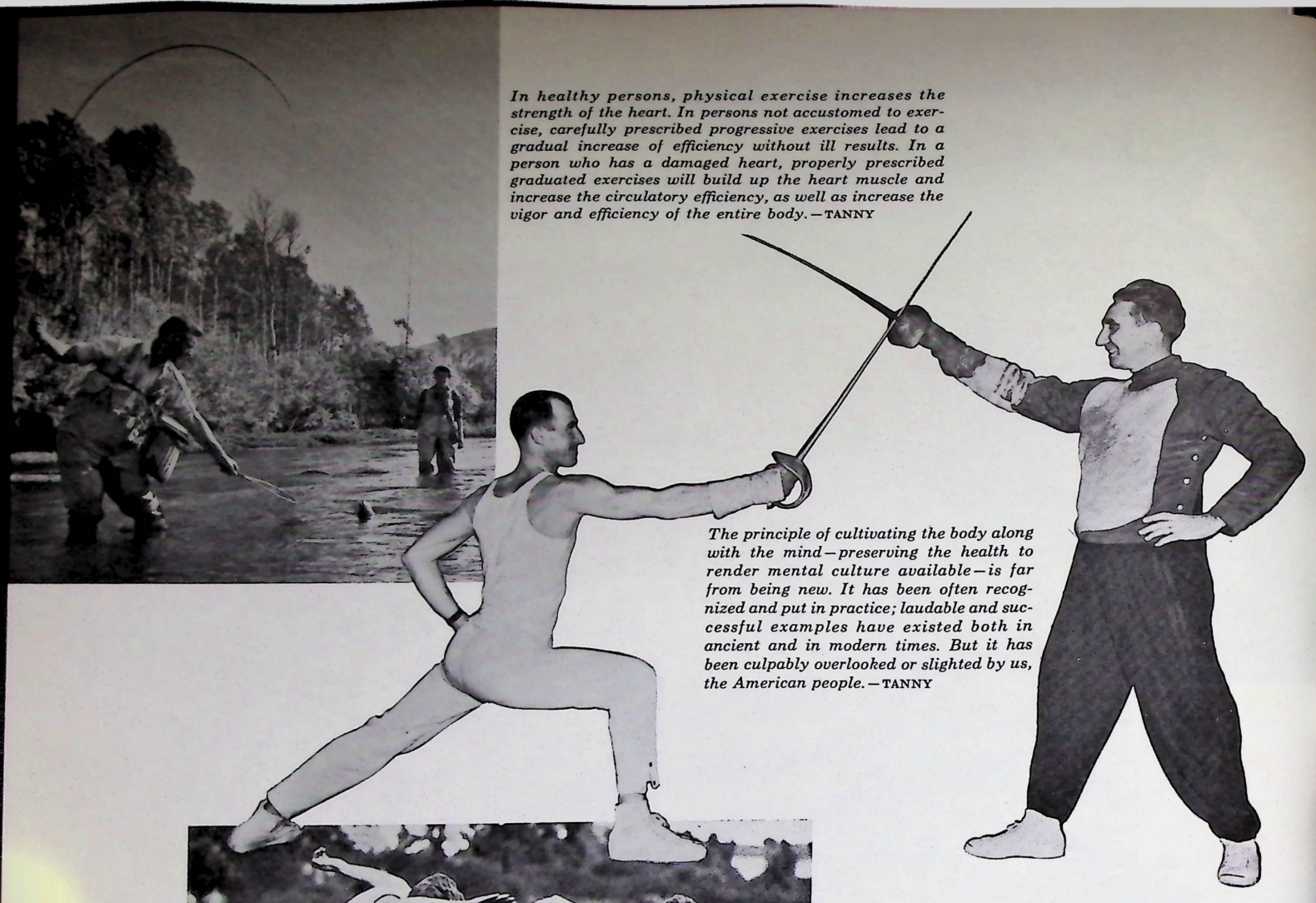
An abundance of proper exercise tends toward the building up of an erect, well-proportioned body. The head, chest and shoulders should be held up. A flabby, clumsy, stooped body and a protruding abdomen detract greatly from the beauty and efficiency of the body. —TANNY

A well-developed, well-proportioned human body is a thing of beauty and an inspiration. It is a marvelous organism, superior to any machine which ever has been or ever can be invented. It is a delicately adjusted organism, yet it will stand severe strain, if it is kept in good condition. —TANNY

Although exercise does improve one's health, exercise alone is not a panacea for all the ills of the body. Exercise is only one of the many therapeutic modalities which contribute to healthful living. Adequate sleep, fresh air, a balanced diet, proper elimination, emotional stability and many other factors enter into the picture of healthful living.
—TANNY

Fresh air is the most beneficial gift of nature; it is given freely and unreservedly; it is the one cure-all, more valuable than medicine, more valuable than the skill of physicians; and yet many of us shut it out of our houses. If each deep breath of cool fresh air cost ten cents as do cooling drinks, most people would be glad to get several such breaths every day. Someone has said, "He who breathes best, lives best." —TANNY

In healthy persons, physical exercise increases the strength of the heart. In persons not accustomed to exercise, carefully prescribed progressive exercises lead to a gradual increase of efficiency without ill results. In a person who has a damaged heart, properly prescribed graduated exercises will build up the heart muscle and increase the circulatory efficiency, as well as increase the vigor and efficiency of the entire body. —TANNY

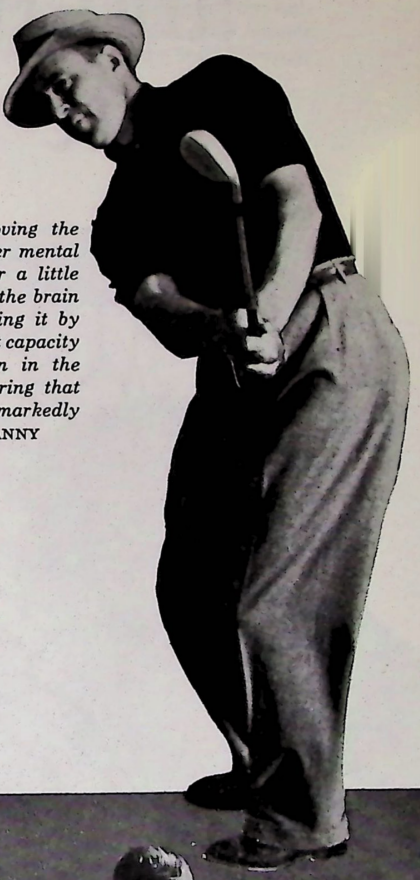


The principle of cultivating the body along with the mind—preserving the health to render mental culture available—is far from being new. It has been often recognized and put in practice; laudable and successful examples have existed both in ancient and in modern times. But it has been culpably overlooked or slighted by us, the American people. —TANNY

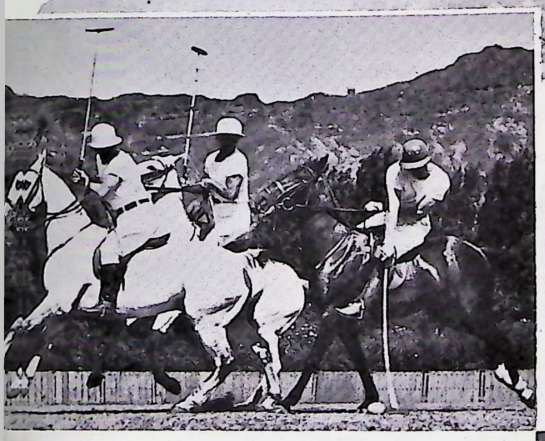
While strength of muscle, courage, self-control, energy, determination and endurance were demanded of the great men of the past in wars and other crises in history, these vital qualities are needed in even higher degree today. Today, special problems call for virile men. —TANNY

As competition becomes more strenuous, the physically weak must go to the wall, the prizes of life unfailingly to the strong—those who have "staying" power. In business and professional life no skill, no learning, no intellectual greatness can carry its fullest influence without a proportionate capacity for physical endurance. —TANNY

There is no doubt that physical exercise is more beneficial when it is pleasant and enjoyable. This is true of all bodily exertion, whether it be the play of the child or the work of the adult. The more one puts his mind into his physical exercise—the more he himself enters into his bodily activity—the greater the beneficial results to both mind and body and the less the unpleasant consequences of fatigue, weariness and depression.—TANNY



Daily exercise, besides improving the body, also actually brings better mental work. Unbending the body for a little while; taking the tension from the brain for a few minutes and depleting it by expanding the chest to its fullest capacity and increasing the circulation in the limbs—these, instead of impairing that brain, will repair it and will markedly improve its tone and vigor.—TANNY



The matchlessly beautiful movements of birds and squirrels and antelopes and horses and the great family of cats, give us a strong ocular demonstration of the truth that grace goes with strength and it is impossible to any animal that is slow and uncertain or feeble. This precious gift, then—grace or beauty of action—is to be attained only by means of bodily strength.—TANNY

People who do not exercise sufficiently have flabby flesh, soft and sickly muscles and their bones are dry as chalk and are easily broken in a fall; on the other hand, if sufficient exercise is taken, the bones are full of sap and have a spring or flexibility that will resist a fracture. Such a person is generally safe against disease.—TANNY

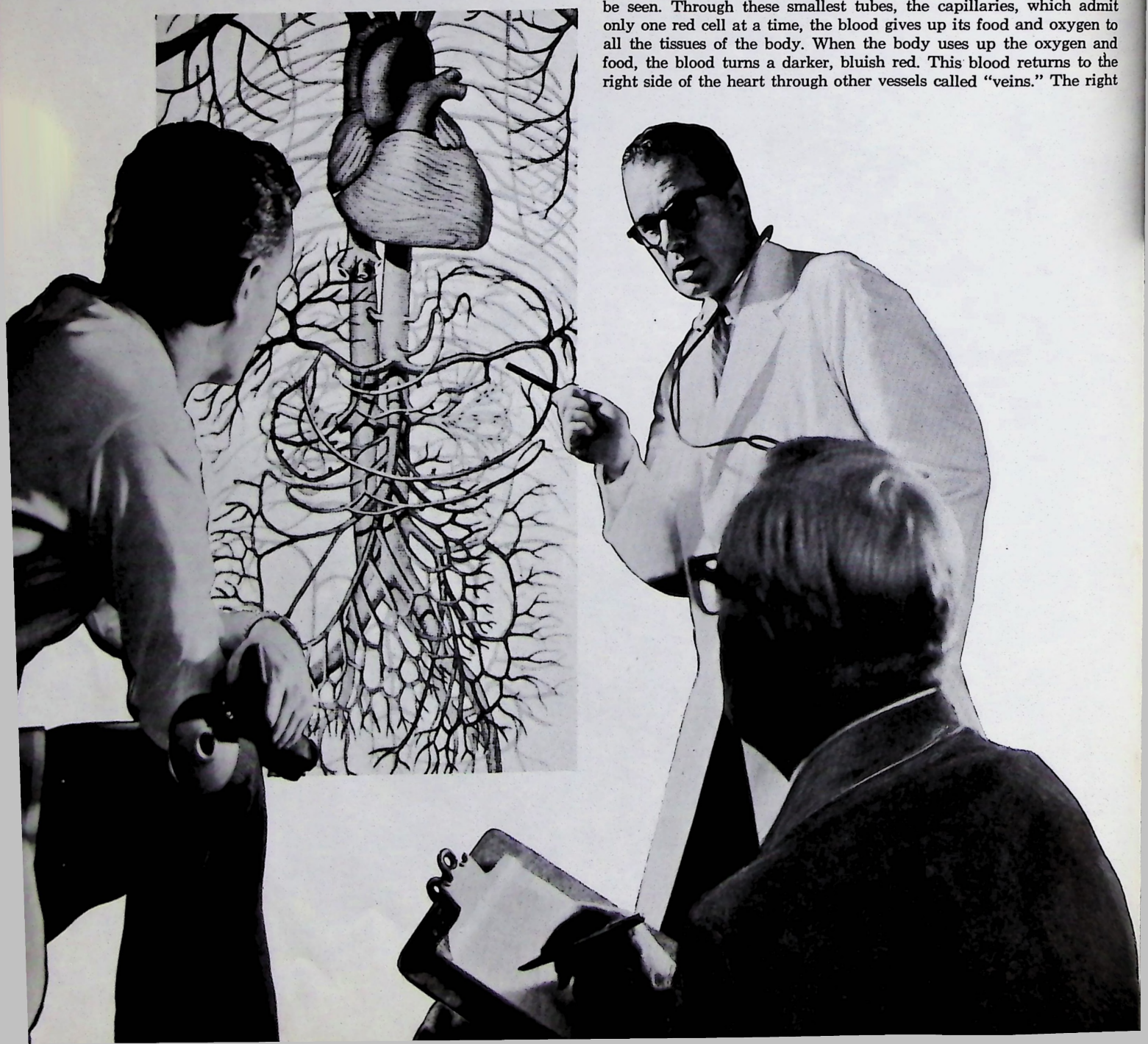
YOUR HEART and how it works

Most people think of the heart as a delicate organ easily strained by overactivity. Actually, a healthy heart is the toughest, strongest muscle in the body. It is more efficient than any man-made machine, it is virtually impossible to strain and produces so much energy that if a lifetime's effort could be applied all at once, it would lift a mammoth battleship fourteen feet out of water.

The heart, which sits diagonally in the chest just behind the breastbone, is composed almost entirely of muscle, laced by a dense network of blood vessels that supply its nourishment and energy. It works about a third of each second, contracting sharply to pump blood through the body. It does this so efficiently that every drop travels from heart to body tissues and back again, about once every minute. In the two thirds of a second between beats it relaxes, while its chambers refill with blood. The size of a large fist, the heart weighs from a little over half a pound to three fourths of a pound.

The millions of cells in the body depend upon the rapidly circulating blood stream for life-giving oxygen and other nourishment and for the removal of wastes. Blood makes up only about eight per cent of body weight, but to keep the blood in circulation through miles of blood vessels during an ordinary day of work, play and rest, the healthy heart pumps many hundreds of gallons of blood at an average daily rate of seventy to eighty strokes a minute.

The heart is divided into a right side and a left side. The left side receives bright red blood full of fresh oxygen from the lungs and pumps it to all the tissues of the body. It pumps the blood through a large tube (the aorta) which branches into smaller and smaller tubes (arteries) that carry the blood to all parts of the body. As the tubes branch off into all the body tissues, they become so tiny they cannot be seen. Through these smallest tubes, the capillaries, which admit only one red cell at a time, the blood gives up its food and oxygen to all the tissues of the body. When the body uses up the oxygen and food, the blood turns a darker, bluish red. This blood returns to the right side of the heart through other vessels called "veins." The right



side of the heart pumps this "used" blood through a special channel (pulmonary artery) that leads to the lungs. In the lungs, the oxygen-carrying blood pigment (hemoglobin) picks up fresh oxygen and turns the blood bright red again. Then it goes again to the left side of the heart and so it goes, over and over. The blood makes this trip hundreds of times a day, every day, for a lifetime.

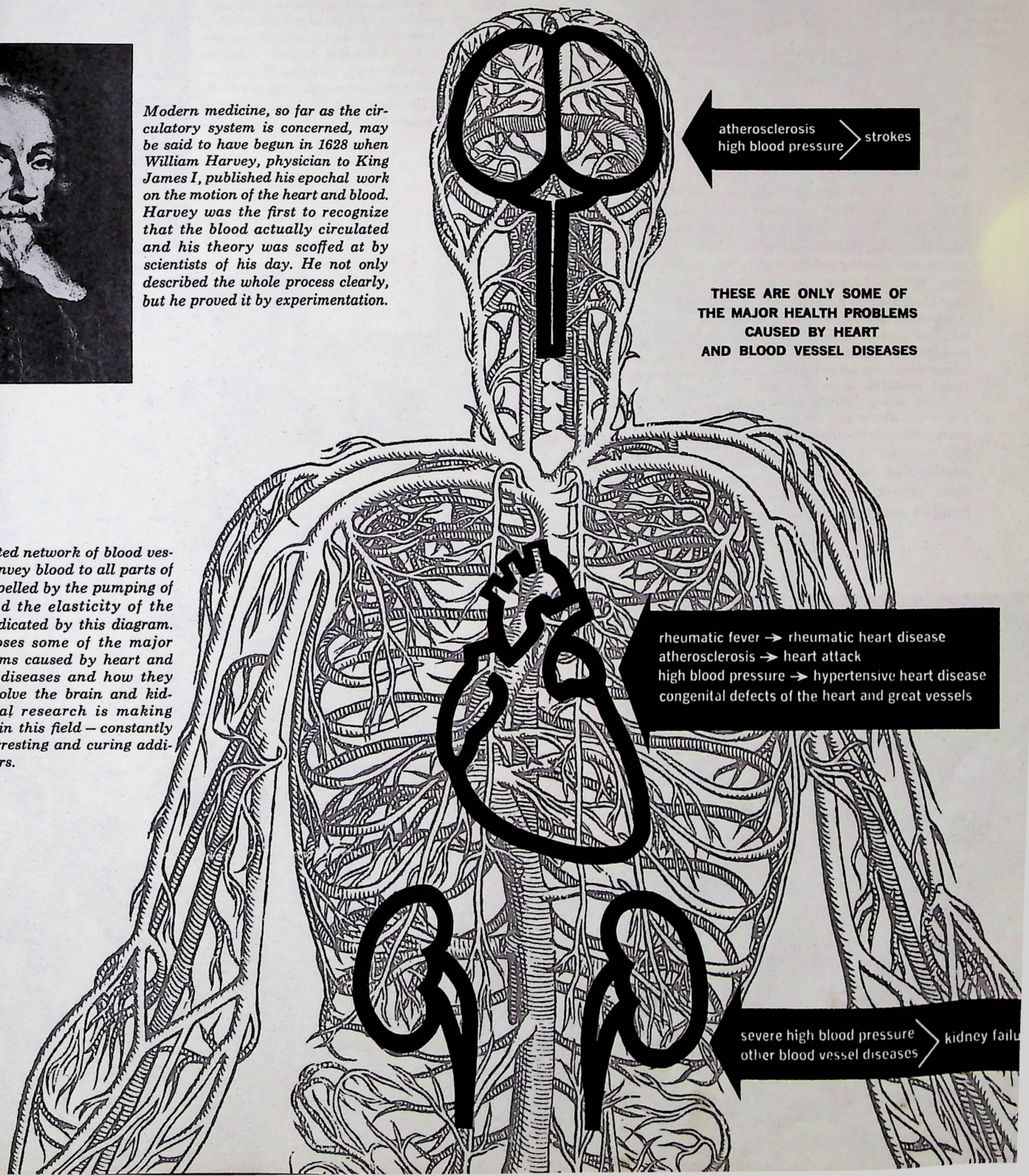
When an increase in blood flow is needed, the heart responds smoothly and tirelessly. First, the heartbeat speeds up, sometimes to twice the usual rate. Second, the heart muscle contracts more completely, pumping out more blood with each beat. In moderate exercise, the heart may pump five times as much blood a minute; in strenuous effort, eight or ten times as much. The heart does a remarkable maintenance job during the split second between beats, when the cells of the heart take their oxygen and other nutrients from the blood. Ever since the physicians have listened to heartbeats and heard variations in the characteristic "lub-dup," they have sought the cause of these irregularities and tried to find ways of strengthening the beat of the failing heart.

Intimately related to the function of the heart as a pump are problems of pressure and volume in the pipes of the cardiovascular system — the arteries and veins. High blood pressure in the arteries can be a serious condition, associated with a high incidence of heart attacks and strokes. A drop in arterial pressure below certain limits is shock, sometimes fatal unless prompt action is taken to raise the pressure. Elevated pressure in the veins, because of weakening heart action, is associated with an accumulation of fluid in the tissues called "edema" or "dropsy," making studies of the dynamics of circulation an integral part of heart research.

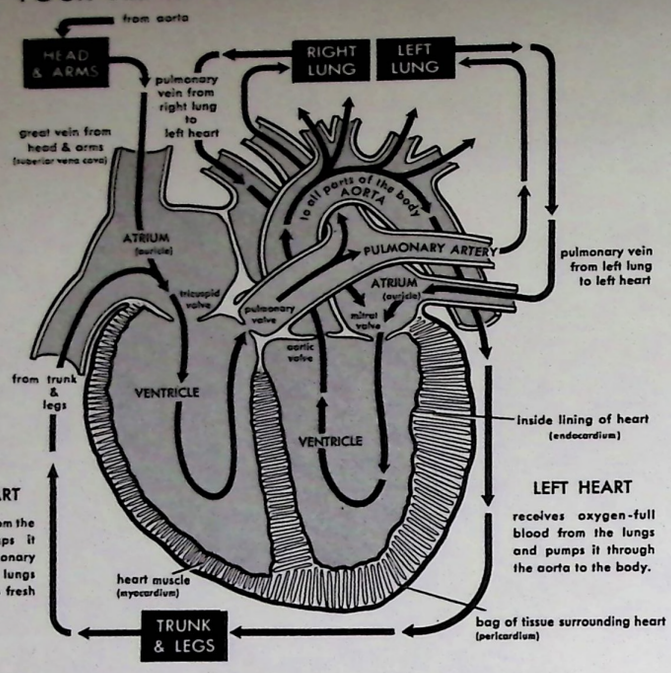
One of the most rapidly advancing fields in all the biological sciences is biochemistry, the study of the complex substances out of which life is made. Molecules of these substances, huge by comparison to atoms, are still too small to be seen under the most powerful electron microscope, but biochemists have been able to analyze these molecules, define their structure and recognize their properties as enzymes, hormones and other elements of the life process. Because the heart and circulation, like other systems of the body, are regulated by these substances, investigation in biochemistry is an important part of heart research.

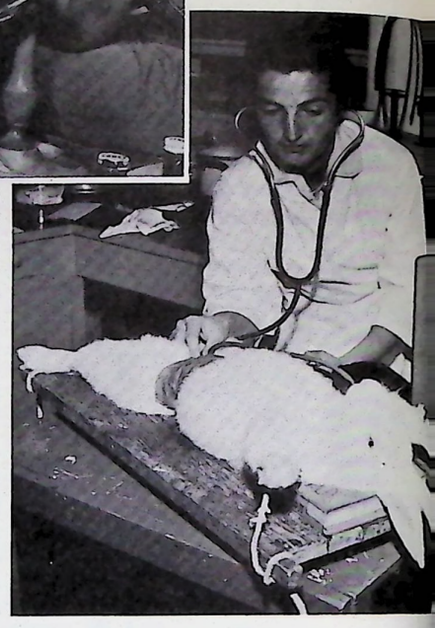
Within recent years the most dramatic advances in the treatment of various forms of heart and blood vessel disease have been made through surgery. Since the first "blue-baby" operation on the great vessels near the heart, surgeons have ventured into the heart itself to repair

Modern medicine, so far as the circulatory system is concerned, may be said to have begun in 1628 when William Harvey, physician to King James I, published his epochal work on the motion of the heart and blood. Harvey was the first to recognize that the blood actually circulated and his theory was scoffed at by scientists of his day. He not only described the whole process clearly, but he proved it by experimentation.



The complicated network of blood vessels, which convey blood to all parts of the body, propelled by the pumping of the heart and the elasticity of the arteries, is indicated by this diagram. It also discloses some of the major health problems caused by heart and blood vessel diseases and how they may also involve the brain and kidneys. Medical research is making rapid strides in this field — constantly preventing, arresting and curing additional disorders.

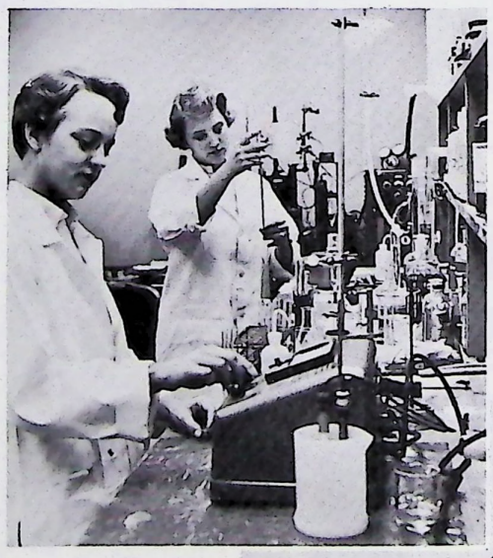


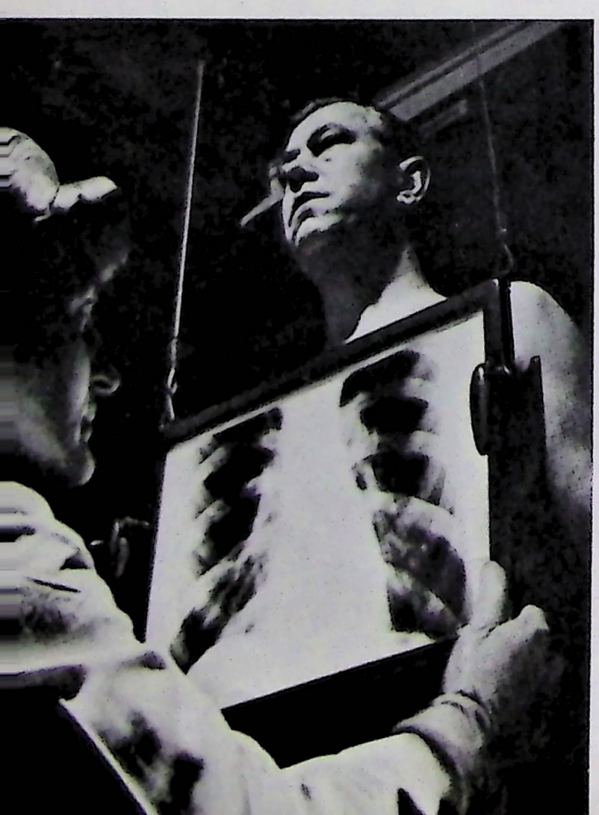


A model of the human heart is used to help children understand its structure and functions (above), while the study of a rabbit aids a medical research scientist in work on hypertension (right). Animals almost never develop hypertension spontaneously, but it can be induced by artificial means to aid research.

a damaged valve or close a faulty opening between the chambers of the heart. They have developed plastic grafts to replace segments of large blood vessels that have been dangerously narrowed or weakened. Advances in heart surgery depend not only on refinement of surgical technique, but on solving a host of corollary problems: how to cool the body down to the point where circulation can be stopped for a few minutes; how to by-pass the heart and lung circulation; how to safeguard the clotting mechanism of the blood; how to guard against infection. Many of these problems have been solved and heart surgery is now commonplace, thanks to research.

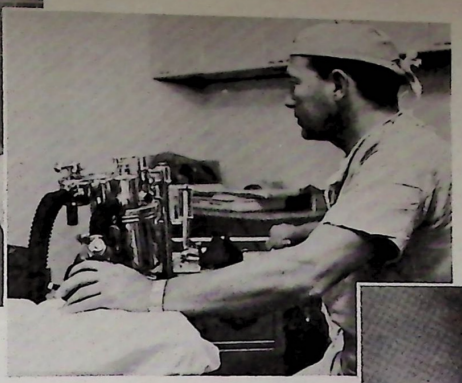
Medical scientists are now certain that heart trouble is not just a natural part of aging. The diseases of the heart and circulation are as specific as malaria: they have causes; they can be diagnosed; in most cases they can be prevented, stopped, or treated. The ultimate aim of heart research is to find the causes of these disorders and ways to prevent them. While this fundamental investigation goes forward, other scientists are at work on more exact methods of diagnosis and more effective means of treatment. As heart research succeeds, medicine will not only be able to prolong life, but guard against those premature deaths that take away men and women in the years when they are most productive and carry their greatest responsibilities for their families and on their jobs. ♦





Each advance in medical knowledge and research techniques lays bare a larger field of ignorance to be explored. New means of preserving human lungs affords researchers an opportunity for closer study and new methods of attack on old problems (right).

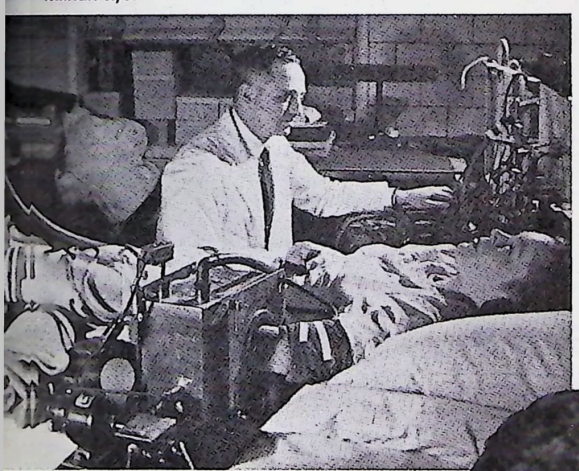
The exact size and shape of the heart can be ascertained by either an x-ray machine or a fluoroscope; the former gives the doctor a permanent record, while the latter shows him the heart and the blood vessels in action.

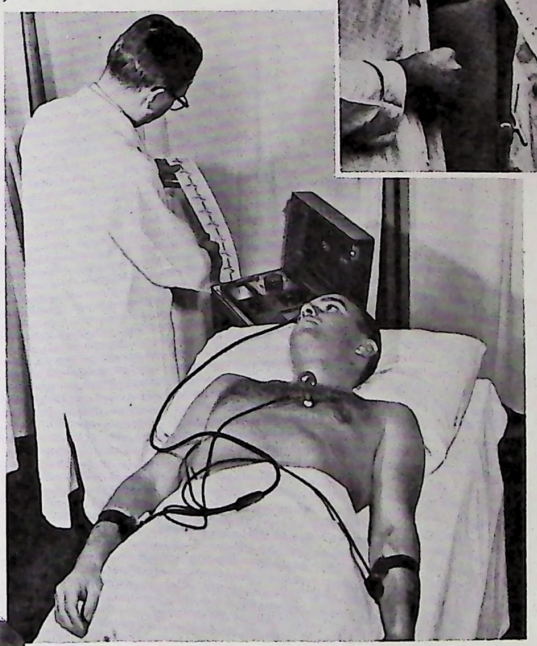


Dr. Jack R. Magit, Medical Director and Chief of Anesthesia of the Beverly Hills Doctors' Hospital, California (right), is representative of the modern anesthesiologist who must be able to utilize electronic equipment which indicates the vital processes taking place within the patient during surgical procedure. In constant vigilance, the anesthesiologist and the surgeon are concerned with the patient's cardiovascular state — the action of the heart — whether it is beating normally, adhering to proper frequency and volume and if any irregularities are occurring.

The improvement in heart function following surgery can be measured by using new radioactive techniques for measuring the amount of blood pumped by the heart in a minute (right). The electrical impulse that controls the contraction of heart muscle is traced by an electrocardiograph (below).

The application of electronics to medicine is aiding scientists in bringing medical research closer to solving the riddles of circulatory disease. Other new equipment, drugs and techniques are continually adding fruitful years to human life.

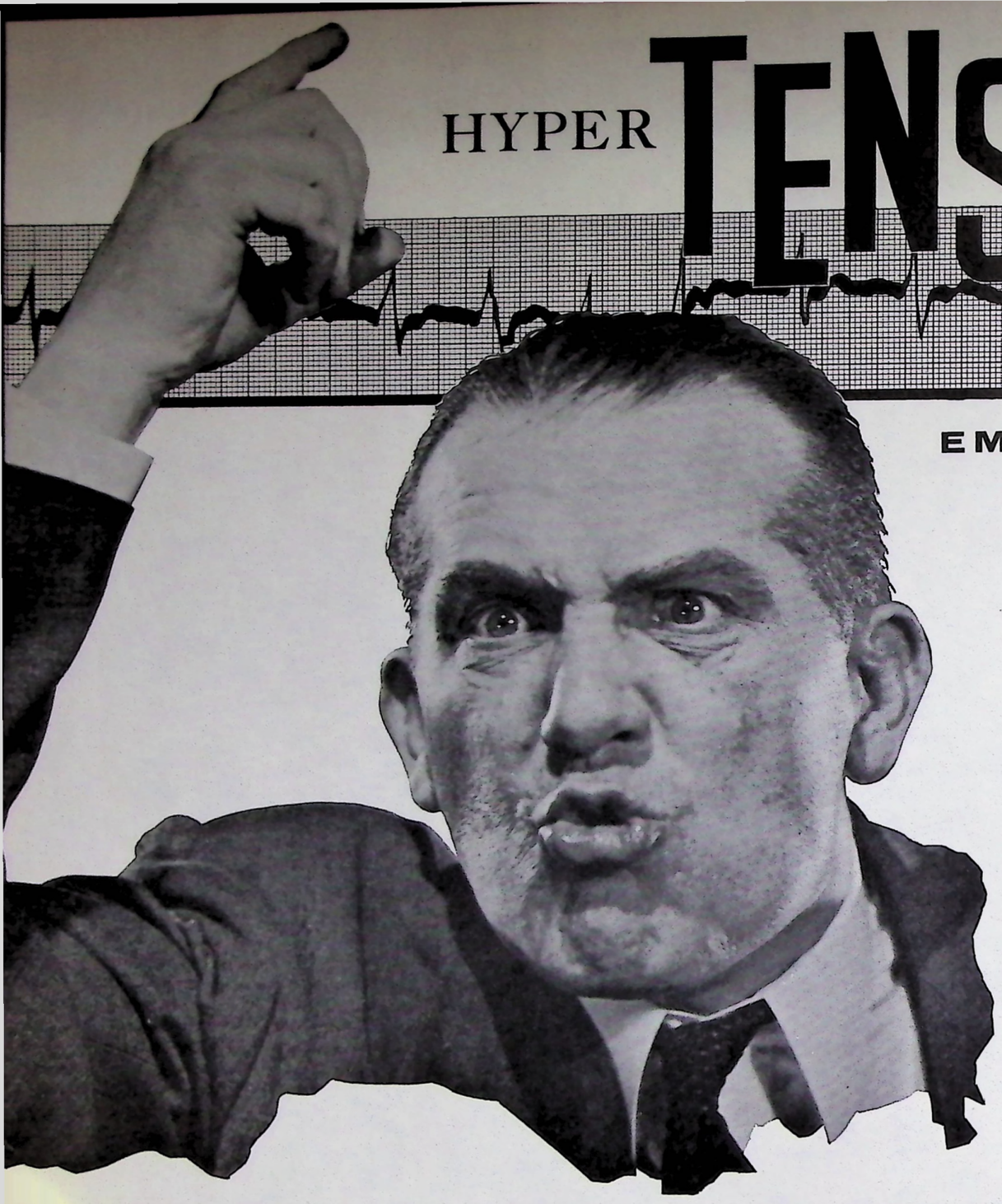




In taking the blood pressure, the blood pressure cuff is inflated until the walls of the artery are compressed to a point where the blood flow is stopped. Then the pressure in the cuff is gradually released. The first sound heard by listening at a point below the inflated cuff represents the first blood flowing back through the artery (systolic pressure). The diastolic pressure is read at a point where there is sudden diminution or disappearance of the arterial sounds.

HYPER TENSION

EMOTIONS AND PHYSICAL HEALTH



Hypertension, which afflicts some 15,000,000 Americans, is often the real villain behind strokes, heart failure and coronary heart disease.

STRESS can often be the spice of life, but when excessive or prolonged, tension may lead to disease. It invariably stems from the inability to put up with the pressures of daily living. A baby straining to sit up for the first time, a businessman who worries constantly about office problems while at home, or home problems while at work, a widow who works to support her family and is both breadwinner and housekeeper, a sick person whose body is fighting to regain health—all are under stress. There are varying degrees and different forms of stress, mental, emotional and physical, which all have some impact, either good or harmful, upon health.

Tension is a personal reaction. A survey of several thousand business executives, all of whom were doing comparable jobs, indicated that it was not the pressures of the job, but how the individual reacted to them, that resulted in tension or lack of it. Every individual's breaking point is different, but as long as he keeps his pressures in balance with his breaking point, he can function dynamically.

Stress has been defined as the rate of all wear and tear caused by life. All emotions involve stress, for emotion is not just a feeling, but a bodily process. Fear and anger make the heart beat faster, the muscles of the stomach and intestines contract, the blood circulate faster, speed breathing and cause other changes which help the body meet the emergency. Intense and persistent anger, fear, frustration or worry, which is kept bottled up, can threaten health. Studies show that almost half of the people who seek medical attention are suffering from ailments brought about or made worse by prolonged worry, anxiety or fear. When tension of this type is too often repeated or continues too long, the body's chemistry may get out of kilter.

Emotional tensions often play a prominent role in certain heart and circulatory disorders, especially in hypertension, or high blood pressure. Nobody knows exactly how many cases of high blood pressure are linked with these tensions, but many doctors believe that most of them are. Why pressures should rise in some persons while others of equal build, age and condition remain normal, is still unknown. It has been noted, however, that hypertension is more common in women than in men, that heredity is an important factor and that it is especially prevalent in people who are high-strung, aggressive and repressive.

Blood pressure, which is the force of the blood against the artery walls, varies continuously, depending upon a person's emotional and physical state. It rises in moments of excitement and becomes lower during sleep. Only when blood pressure goes higher than it should and

stays that way does it cause trouble. Low blood pressure, which is not harmful in any way, may in fact be a blessing, as those evidencing it tend to live long lives.

Hypertension may be part of another disease, in which case it is called "secondary hypertension" and can usually be cured by finding and treating the disease. Hypertension, when it is not part of another disease, is known as primary, essential or malignant hypertension. Many people with hypertension have no symptoms at all, while those symptoms that are associated with it can also be indicative of some other difficulty. Headaches, shortness of breath, dizziness and fatigue, can all be signs of high blood pressure—or of something else.

Because hypertension adds to the work of the heart and arteries, physicians do not take it lightly. The heart, forced to work harder than normal over a long period, tends to enlarge. A slightly enlarged heart can function as well as ever, but a heart that is very much enlarged may have a hard time keeping up with the demands put upon it. The arteries and arterioles, after the wear and tear of years of high blood pressure, may become hardened, less elastic than they should be and scarred—a condition known as arteriosclerosis, which may lead to a heart attack. Strokes are also a possible complication of hypertension, but only a small percentage of persons with high blood pressure have serious strokes.

In the earlier years of the disease, the only medication required is often a mild sedative or tranquilizer. Although over the years a wide variety of drugs have been used, unpleasant and harmful side effects have resulted and dosages have to be established very carefully by doctors, after testing individual reactions. However, a heartening breakthrough in the treatment of hypertension has recently been achieved with the discovery of a drug which has been found effective against both mild and severe cases of hypertension, while its side effects have proven mild and easily remedied.

Hypertensive patients who are overweight are generally put on strict diets. Loss of weight may cause the blood pressure to go down, but even if it does not, it reduces the strain on the heart caused by excessive poundage. Digestion also calls for extra work by the blood vessels of the digestive tract, so smaller and more frequent meals may prove beneficial. A diet low in sodium also helps to reduce blood pressure in some patients.

If these methods of treatment do not satisfactorily lower blood pressure, an operation called "sympathectomy" is sometimes performed, although with increasing rarity. Certain nerves, which control the size of the small blood vessels known as the arterioles, are cut by the surgeon in order to relax the arterioles and thus lower the blood pressure. In some patients, however, the blood pressure rises to its old level within weeks or months after the operation.

Since blood pressure is at its lowest during sleep, it is important for the hypertensive to get plenty of rest. Short naps or rest periods during the day will help reduce the pressure and fatigue should always serve as a warning to take time out for rest. This does not mean that those with high blood pressure must abstain from exercise. On the contrary, the blood pressure tends to fall after mild exercise, but it should never be continued to the point of fatigue. Therefore, physicians advise against any form of competitive sports because of the difficulty of quitting in the middle of the game. Coffee, tea, liquor and tobacco do not cause hypertension and, except in special and fairly rare cases, they do not aggravate high blood pressure when used in moderation.

The hypertensive person should avoid tension whenever possible. Sometimes a change of job to a situation involving less pressure or more congenial working conditions has caused blood pressure to return to normal after years of hypertension. Since tension is a personal reaction to a situation, a change in attitude toward the situation may be all that is needed. Learning to live calmly with situations that cannot be changed is good advice for anyone, but it can add years to the life of the hypertensive individual. The average victim of the disease develops high blood pressure in his mid-thirties and may well live twenty or thirty years with the condition. Meanwhile, research into the causes and cures of this still mysterious malady is constantly extending the life expectancy of those afflicted with it.

Tension can be avoided by balancing work with play, learning to loaf a little, discovering that some things can be put off a bit when the work load seems overwhelming, taking advantage of temporary escape from a problem or worry in some diversional activity, relieving anxiety about health with periodic medical check-ups—and when tensions *do* develop, they can be worked off in physical exercise. The way people handle their tensions can indeed be a matter of life or death. ♦

WHY MOST PEOPLE ARE TIRED

FATIGUE is a growing hazard in America. Never has there been so much to do, to see, to comprehend—and because the day never seems quite long enough, there is a tendency to try to add to it by borrowing hours that should be spent in sleep — sleep which, when lost, can never be regained. Chronic tiredness is one of the most frequent of all causes for a visit to the doctor today — and there are countless thousands who do not see physicians, but who plod along the weary treadmills their lives have become, wondering why the zest has gone out of life and why they feel so tired all the time.

How often do you complain of tiredness? Everyone gets tired, of course. Fatigue is the natural, expected and even desirable result of normal activity and when kept within proper limits, it is satisfying in itself, engendering a feeling of accomplishment and a desire for wholesome rest. Excessive fatigue, however, is debilitating and often results in restless sleep that leaves a person feeling more tired in the morning than when he went to bed. This excessive fatigue accumulates and frequently becomes chronic, causing loss of alertness, general bodily ill-health and lowered resistance to disease.

One of the most common causes of marital bitterness, bickering and dissatisfaction is chronic fatigue. Polio, the common cold, encephalitis, pneumonia, tuberculosis and other diseases, are more apt to strike those already suffering from chronic fatigue. Fatigue alone, or in combination with drinking or speeding, is at the bottom of over half of all serious automobile accidents. Most injuries in athletics come when players are fatigued. Acts of violence are sometimes committed by those too tired to "know what they are doing."

The causes of fatigue are legion, ranging from an underactive thyroid to a dislike of the boss. Since the origin is frequently not immediately apparent, the first step for anyone who "feels tired all the time" should be a visit to his doctor. Chances are, the verdict will be that disease is not the culprit, although anemia, hookworm, poor circulation, infection and a number of other maladies can cause fatigue.

In any event, eliminating disease as the source of fatigue should also eliminate worry about the state of one's health — and worry is another fatigue creator. Each individual, before he can stop worrying, must evaluate the causes of his worry — the world situation, a sick wife, a child doing poorly in school, fear of losing his job, concern over mounting bills. Indecision in regard to these problems is more tiring than even a wrong decision and for those who cannot arrive at a decision by themselves, there is always competent help available from doctors, school guidance personnel, lawyers, pastors and others who are trained to aid those in need of assistance. Persons who become excessively upset by the world situation should never listen to more than one news commentator, especially when the news is bad, nor should they read several newspapers down to the last gory detail.

Emotions cause fatigue. Anger and fear speed up bodily processes. Resentment and dislike result in tiring tension. Thousands who complain of being tired are simply bored. Many a secretary has gone home

exhausted — not as she thought "by a hard day at the office"— but by boredom, only to discover a resurge of vitality on receiving an unexpected invitation to go dancing. Fatigue can also come from loneliness. People who return to an empty home from work are more likely to become fatigued before the end of the day than those who anticipate pleasurable companionship.

A physiological state which has nothing to do with the activity performed is sometimes the author of fatigue. Eyestrain may impose such a handicap upon an individual that he becomes tired sooner than he should. Inadequate ventilation contributes to fatigue by placing an unnecessary burden on the temperature-regulating mechanism of the body, while temperatures ranging between sixty-eight and seventy degrees Fahrenheit are least productive of fatigue. Noises may interfere with concentration and result in tension and fatigue, although some people can become adapted to noise that is distracting or irritating to others.

Music is often helpful in alleviating fatigue because it aids in screening out disturbing noises and tends to relax tensions. Cool colors such as green, blue and grey not only aid vision, but are relaxing, improve morale and have a cooling effect when temperatures are high. Painful arches, improperly fitting shoes, inefficient posture and uncomfortable furniture are also responsible for accelerating tiredness. It may be that suitable glasses, better lighting, correctly fitting shoes, more comfortable clothing, proper furniture, pleasant surroundings, elimination of noise, good heating or improved ventilation will eradicate excessive fatigue by removing the cause.

Psychological or mental causes — and they are by far the most prevalent — cannot always be overcome quite so easily. It may not be possible to tell one's mother-in-law to move, to find a new job or to stop worrying about a sick relative. But fatigue can still be reduced. Exercise relieves tension and, when taken regularly, produces physical fitness which prevents easy tiring. A walk before bedtime, a swim after work, setting-up exercises — whatever kind of activity the individual prefers — followed by a glass of warm milk and a warm bath before going to bed, will generally provide the restful sleep that revitalizes.

Daytime naps are becoming a common way of avoiding chronic fatigue. Many executives completely close out the world for half an hour after lunch and return to their demanding schedules refreshed and eager for business. Boredom, which attacks everyone from time to time, can be destroyed by any kind of change — a coffee break, a walk around the block, a talk with someone, a phone call to a friend, or even changing the kind of work one is doing for a few minutes.

Shopping is perhaps the most fatiguing activity indulged in by the average woman — and one which most husbands try to avoid participating in whenever possible. It has become a major complaint of many a husband looking forward to a relaxing atmosphere at home that dinner is late and unappetizing, his wife exhausted and irritable and the house a mess after a shopping spree. Wives should conserve their energies during the day, napping when tired. The attractively-groomed wife who smilingly greets her husband at the door on his return from the office practically guarantees a pleasant evening for the entire family. Who knows how many divorce cases really result because both husband and wife are just plain tired out — either from the strain of the marriage, or that in addition to other causes.

Enough rest and sleep are vital for everyone, but it is possible to get enough sleep and still be tired. Too much sleep brings listlessness, causing the system to become sluggish from lack of sufficient physical exercise to maintain muscle vigor and tone the blood circulatory system. The more sluggish the system becomes, the more fatigue mounts and the greater the desire for sleep. This same vicious circle can result from eating as an escape from boredom caused by fatigue. Excess pounds produce more fatigue when exercise and recreation diminish as boredom and weight increase and muscles lose their tone and become flabby.

Some people use alcohol as an energy pickup, but although it has a slight stimulant effect in small amounts, the second or third drink acts as a depressant and dampens vitality. The same is true of smoking and drinking coffee and tea. Vitamin pills, contrary to the belief held by some, do not contain energy and have no effect on fatigue except in extremely rare cases where fatigue is caused by dietary deficiency.

"Pep pills," such as benzedrine tablets, should never be taken as a regular means of overcoming fatigue. Stimulants do not cure fatigue — they conceal it. Evidence indicates that "pep pill" drivers are frequently involved in accidents when the effect of the pills wears off and sudden fatigue strikes. Such pills should be limited to emergency use only and should then be taken only with a physician's approval.

No magic formula has yet been evolved to cure fatigue. Tranquilizers, "pep pills," vitamins and stimulants will not help. The problem can only be solved by discovering the cause of chronic fatigue and eliminating it if possible, but at least establishing a sensible routine of living that includes plenty of rest, exercise and interesting activity, in order to recapture that wonderful feeling of well-being and joy that is the right of everyone. ♦

NUTRITION and WEIGHT CONTROL

Obesity is due to over-nutrition and underoxidation of the tissues, or, in other words, is the result of more food than is necessary either in amount or kind and of too little exercise. The result is that fat is deposited, muscles deteriorate, energy diminishes and even the mental powers are dulled. The functions of the vital organs become sluggish and the tax upon the heart is increased. These conditions tend to slow down the bodily activities, hasten old age, decrease the resistance and so shorten life. —TANNY

WHAT this country needs is to lose a billion pounds! Think what the loss of that mountain of fat would mean to the nation's appearance and health. Obituary columns would be shorter. Longevity tables would take a new lease on life. Hospitals would be less crowded. Everyone would feel better, have more vigor and zest for living. It sounds like an impossible goal, but Americans have faced and conquered greater challenges, although more people have perished by the fork than by the sword.

The early settlers of America were lean, lithe men whose survival depended upon their ability to wrest the necessities of life from a challenging wilderness by hard, physical labor. As the country emerged from the pioneering stage and from an agricultural economy into an industrial, push-button age, man's caloric requirements diminished, but he often failed to proportionately reduce his caloric intake and became cushioned in fat.

In fact, overweight came to be considered a sign of success and prosperity within a few generations. A man who was fortunate enough to provide himself and his family with plenty of food let rotundity speak for his comfortable position in life and plumpness was considered part of a woman's charm. Not too long ago, the housewife spent two hundred and forty calories scrubbing the family wash and another fifty hanging it up to dry. Now she expends only fifty calories in dumping the clothes in the washer and pushing the necessary buttons. Thus, she has gained two hundred and forty calories from just one household chore. When the energy conserved by the use of other appliances is added, she may be expending almost a thousand fewer calories a day than her mother did, so unless she is consuming fewer calories, or getting rid of them through other forms of activity, the modern homemaker is undoubtedly dismayed to find herself putting on weight—not considered so charming in this day and age.

It is now known that an overweight person is not necessarily well nourished. Current knowledge of what contributes to good health and long life makes it clear that excess poundage puts an undue strain on the human body. Statistics show that people who are quite overweight seem to be more susceptible to certain diseases, may have less resistance to infection and even tend to have more accidents than slim people.

Actuarial statistics have shown time and time again that overweight means a mortality fifty per cent higher for the obese than for others. The increase in the mortality rate can go as high as seventy-five per cent for those who are overweight by fifty per cent or more. Anyone who thinks he can gorge himself every day, live an active and happy life for fifty years and then suddenly pass away in his sleep, is making a big mistake. Fat is just not that considerate. Obesity is the prime reason for early breakdown of the human body. Studies show that overweight people are far more prone to many diseases and that obesity impairs vigor, causes one to tire more easily, hastens onset of complications, is associated with high blood pressure and hardening of the arteries and increases surgical risks.

This unhealthy fat results from unbalanced consumption and expenditure of calories, which are the units used to express the heat or energy producing values of food. A calorie is the amount of heat required to raise the temperature of one kilogram of water one degree centigrade, or one and eight-tenths degrees Fahrenheit. Calories are not only expended in physical work, but in maintaining life. The beating of the heart, the work of the lungs in breathing, the activities of other vital organs and the regulating of body temperature—all require energy. This heat or energy is produced in the body by a chemical reaction between food substances and oxygen from the atmosphere.

The number of calories an individual requires depends upon his pattern of energy spending. If a calorie is not used up, it appears as fat. However, all people do not expend the same amount of energy because each body functions differently. Some individuals gain weight while eating less than others of the same age and height, although performing activities that are just as strenuous, because their metabolism rate is lower. A manual laborer uses more calories than a sedentary worker and younger people require more calories than older persons.

As people grow older, their bodies slow down and require less food and that which is not needed becomes fat. Thus, an individual can become overweight at forty on the same diet that kept him slim at twenty. After the age of twenty-five, about one per cent less food is required per year. Doctors maintain that the principal cause of overweight is too much food, coupled with too little exercise. Glandular disturbances do occasionally contribute to overweight, but even in these rare instances, proper diet under a doctor's supervision melts pounds away; no glandular treatments, regardless of how good or how much they are needed, can possibly cause a loss of weight in a person who overeats. A person with glandular abnormalities can and should reduce, if for no other reason than to give the glands a chance to normalize.

Heredity certainly plays a part also, although just how great is still not known, but it is important to remember that family eating habits carry a lot of weight! By changing their eating habits, people from so-called "overweight families" can reduce. Habits of food use tend to be passed on from parents to children. The selection of a family's food is likely to depend on the habits and preferences of the dominant person in the family and children usually develop food likes and dislikes similar to those of their parents. A child does not inherit his distaste for spinach, nor his love for saturating everything with catchup, but he may well emulate a beloved and admired parent. Then, when he reaches adulthood, he tends to select and prepare food he enjoyed as a child. Thus, food selection depends largely on patterns that begin developing in childhood. Recent investigations have demonstrated that children of one obese parent are six times, and children of two obese parents thirteen times, more likely to become heavy than children of thin parents.

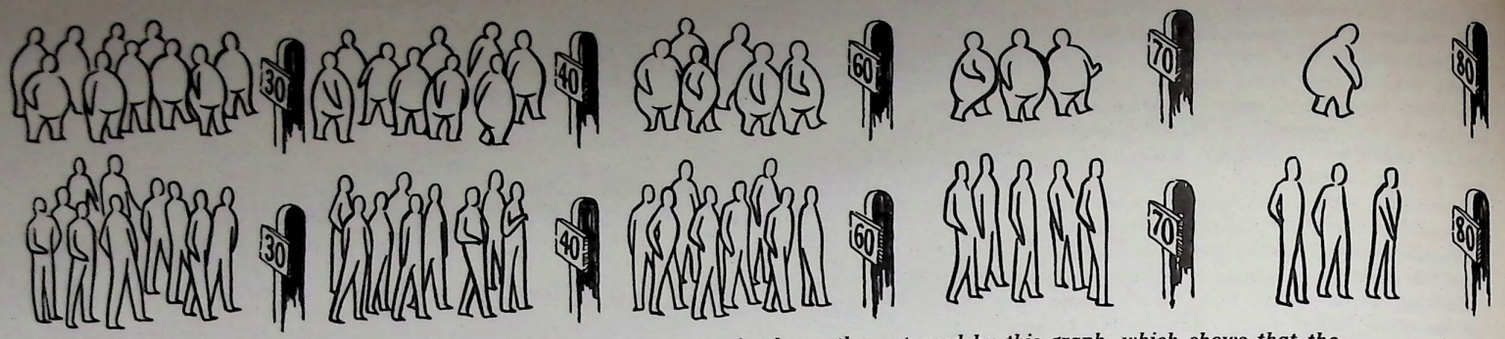
A person's temperament may have something to do with the fact that he has a weight problem—though this still does not make overweight a natural state of affairs. A very inactive person who goes on frequent eating sprees needs to make a conscious effort to change if he really wants to reduce and keep in trim. Some people eat too much when bored or restless—for want of something better to do. Others may, without realizing it, eat to relieve tense feelings. For a few people, food seems to fill an emotional gap and becomes a makeshift substitution for something lacking in their lives.

Psychologists have found that there are three types of overeaters. There is the aggressive individual whose life centers around oral activities, who loves to eat, drink, chew, swallow, smoke, talk, suck and bite. He feels as though he is adding to himself when he eats, since he gets bigger and is literally able to "throw his weight around." During periods of frustration and tension he is particularly likely to gorge. To the passive, dependent person, eating is associated with warm feelings of love and protection and he is most liable to stuff when feeling lonely, deserted, dejected, unappreciated or unloved. Lastly, the timid soul insulates himself from a frightening world with a fortress of fat, impressed with the defensive virtue of size. Not all aggressive, dependent or timid people are overweight, of course, but many fat people fit into one of these three patterns, usually without realizing it.

Then there are the people who eat too many high-calorie foods, only because they do not know or have not attempted to find out what foods make for better nutrition. Regional America is saturated with food habits peculiar to given sections of the country—many of them reflecting the diet of those who migrated there or the local availability of foods. People living in coastal areas tend to eat a great deal of sea food and garden vegetables, but their diet may be short in animal protein foods. Inland menus generally feature meat or poultry to the exclusion of sea food, despite the variety of fresh-frozen fish and shellfish now in markets everywhere. Statistics show that in the United States, one half to three quarters of the food eaten in rural areas is local produce and that rural diets tend to be nutritionally inadequate. In a large proportion of farm families, diets are poor in fruits and vegetables because the cream of the local crops and produce is shipped out of the area to be sold, leaving second-grade produce to be eaten at home.

Food habits of selection, preparation and service can be handed down from generation to generation in the most rigid of patterns and often reflect the prevalence or scarcity of various kinds of foods in the countries of origin. Of course, a great many people with parents from foreign countries take complete advantage of the vast variety of foods available to Americans, adding spice to their diet with favorite Old World recipes. Thus, any number of factors—custom, tradition, lack of information, food preferences and even emotional trouble—hide behind eating habits and often result in a diet inadequate in food value and overloaded with calories.

Essential foods may be divided into two broad groups, those that supply heat and energy to the body, such as carbohydrates, fats and proteins and those that supply the accessories, which are mainly minerals and vitamins. A balanced diet is one that each day includes some or all of the foods that are essential to the maintenance of the body. Moderate portions of carbohydrates are vital for every diet and supply the food most easily assimilated for quick energy. They are found mostly in vegetables and fruits, the potato being the most outstanding carbohydrate vegetable. Any excess of carbohydrate is



The detrimental influence of obesity in every age group is eloquently portrayed by this graph, which shows that the death rate for people 25 to 50 pounds overweight is from 25 to 75 per cent greater than that for people of normal weight.

converted and stored as the dreaded enemy — fat.

Pound for pound, fat contains twice as many calories as carbohydrates. The usual animal fats are found in butter, cream, meat and egg yolk. The vegetable fats, which are found mostly in seeds and nuts, are almost always in the form of oil — olive oil, cottonseed oil, peanut oil and corn and coconut oils. While fat is an essential food, most people, especially those who do no active manual labor, need only a small amount of fat in their diets.

The most essential of all foods are those containing fair amounts of protein, which also supply the body with its needed fuel and energy, but, in addition, serve the very vital function of building and repairing body tissues. Unlike fats and carbohydrates, proteins cannot be stored, so it is extremely important to eat some protein foods every day. The best sources are meat, fish, eggs, milk products, the cereal grains and the legumes — peas, beans and lentils. Anyone who adheres to a routine diet containing carbohydrates, fats and proteins will also obtain all the vitamins and minerals necessary.

The scale is the best judge of how much each person should eat. A weekly weight check will indicate whether or not calorie consumption is too high. The gain of a pound or more signifies a need to cut down the size of portions. If, during the following week, the weight goes down, it is safe to assume that the right amount for the satisfaction of energy needs has been found.

A normal amount of fatty tissue is very useful in the body not only as reserve fuel, but as a padding about the nerve plexuses and to buoy up the abdominal organs and keep them in place. A layer approximately one fourth to one half of an inch thick normally belongs under the skin. The amount of this subcutaneous fat can be measured by taking a deep pinch of flesh on the side of the body just over the lower ribs. If the spread between the thumb and index finger is more than an inch, there is too much fat. A second test for overweight can be made by lying flat and placing a twelve-inch ruler on the stomach with one end between the flare of the ribs. The ruler should stay flat. If it points toward the ceiling, it is time to take action — action in the form of exercise, but even more important, in the form of pushing one's chair away from the dinner table before too many calories are consumed. While there are many facets to the problem, the main pound producer is still too much food and too little exercise.

People cheat themselves out of a great deal of physical pleasure by remaining overweight. They are fat-bound and lack the muscular freedom, the buoyancy, the underlying vitality of a healthy, slender person. Each added pound makes it easier to gain more and exercise automatically decreases correspondingly. The fatter a person becomes, the less exercise he takes and the less exercise he takes, the fatter he becomes. With each new pound, the obese person becomes more conscious of food. Simply because he knows he should give up certain foods, he is inclined to eat more of them. He can eat less food than the slender person and still gain weight, for the fatter he becomes, the less food his body needs. The greatest mistake is to stop reducing before the ideal weight is reached. For a person above the ideal weight it is a continuous fight to keep from gaining again.

A person may succeed in reducing one hundred pounds, but if he has not changed his food habits, that is, if he has not learned to enjoy the foods on a reducing diet better than those loaded with calories, the reducing has not been successful. He will probably gain all the weight back again, if not a few additional pounds. Food habits must be changed if the dieter is to remain slender. The success of a diet is not measured by the number of pounds lost, but by the length of time those pounds stay off.

It is possible to reduce by following a plan that adds up to better health and better looks without starving and it is not necessary to count calories with a do-or-die determination. Some people find it harder to reduce than others, but there are sensible ways to take off weight without taking all the fun out of life.

For any large-scale reduction program, a doctor should be consulted. With his assessment of health, the amount of weight that should be lost and what is wrong with the present eating pattern of the potential dieter, a program can be established. Perhaps the doctor will decide that a total of thirty-five pounds should be lost at the rate of about two pounds per week, a regimen that will allow the body to gradually adjust to the change. A weight-reducing plan is easier for most people to follow if they tackle it in slow and easy stages, recognizing that it cannot be accomplished overnight, or the doctor may recommend a diet that will take off part of the excess weight quickly, with the balance to be lost gradually over a period of time.

The appetite must be re-educated to appreciate foods that are low in calories and high in nutritive value. A reducing diet must supply all the necessary nutrients — proteins, vitamins and minerals. All foods have some caloric content, but since fats and carbohydrates are the richest sources, these are the main foods on which to cut down. It is also important to pay attention to the size of servings as well as the kinds of food eaten. Eating meals slowly and chewing them well helps to make smaller amounts of food more satisfying.

To some people, the word "diet" is synonymous with "rabbit food" — lots of lettuce and carrots and little else — but that is an outdated concept. It is quite possible to eat attractive, satisfying meals, including many of the foods to which one is accustomed, but in smaller portions and perhaps prepared differently. Foods that are usually fried can be boiled, broiled, stewed, or baked, for instance. The more varied a person's food likes are, the easier it is to substitute low for high-calorie fare.

Moderate exercise helps the body burn up superfluous fat. How much and what sort of activity is best depends on age, physical condition and a person's usual routine. One who sits at a desk five days a week should never hurl himself into a whirlwind of sports on the weekend. Some mild form of exercise should be taken regularly and in considerable amounts, rather than spasmodic violent exertions. A daily walk — and it does not even have to be a brisk one — can be a great help in taking off weight and keeping it off.

Just as many people underestimate the amount they eat, so do many overestimate the number of calories that exercise disposes of. For instance, the office worker who plays golf once a week may have a soft drink before teeing off, another after the first nine holes and a couple of highballs after finishing the round. Finally, he tops it all off with a substantial meal, which he feels he has earned. He has walked about five miles, using up approximately five hundred calories. But what he has eaten has added up to fifteen hundred—a gain of a thousand calories!

A survey of industrial workers with different types of jobs showed that the lightest food intake was among those who engaged in moderate physical activity. Those who exercised more ate more, but those who exercised less did not eat less — they, too, ate more. If exercise decreases below a certain point, food consumption no longer decreases. In other words, walking a half hour every day may be equivalent to only four slices of bread, but not walking does not eliminate the desire for the bread. Thus, a choice must be made between exercising or going hungry by those trying to maintain their weight level or lose poundage.

A moderate amount of exercise may result in using five hundred

calories in excess of the amount required for maintenance, while more strenuous exertion may require a thousand or more. The fuel to provide this energy must come either from the food or tissues and, if part of the fuel foods taken in are used for doing muscular work, the excess left for forming fat will be less — or even non-existent.

When food consumption is too low to provide the energy needed both for maintenance and work, the body tissues must supply part of the required energy, resulting in a weight loss. A moderate amount of exercise — an amount which does not increase the appetite and thus nullify its beneficial effect, coupled with a limited amount of food — thus constitutes the most efficient means of preventing overweight and of taking off excess poundage.

Some people find breaking the pound barrier an impossible goal to achieve by themselves and many have more success when they join group reducing efforts. Health clubs and gyms have taken excess pounds off thousands who have had fun and, in the process, gained new skills in various sports. Others have found the support they needed by joining groups whose members congratulate, scold and encourage each other into svelte new shapes.

A weekly weight check is important whether the dieter is part of a group effort or not. Even when the diet is strictly adhered to, there are times when the scales fail to show a loss, for lost fat is sometimes replaced temporarily with water in the tissues — a condition that gradually corrects itself as dieting continues — and therefore it should not be cause for discouragement. A slip now and then is to be expected, too, but renewed effort and determination will soon offset the effects.

Skipped meals do more harm than good in dieting. Skipping causes hunger and it is easier to avoid overeating when not over-hungry. A good breakfast, one that supplies from one fourth to one third of total daily calories, is important. This not only provides energy, but makes it easier to resist the temptation to eat between meals or eat too much lunch. For those who must lunch out, it may be easier to stick to a diet by taking a well-planned packed lunch from home.

When planning diet menus, coffee breaks, snacks and other extras must be taken into consideration. To make up for a doughnut or pastry at a coffee break, toast at breakfast or dessert for lunch can be eliminated in order to even up the calories. Dessert or milk from dinner or lunch can be saved for snack time. Carrots, celery, radishes and bouillon are helpful for between-meal hunger pangs.

Dieters have to watch out for hidden calories in extra butter or margarine on vegetables, oil in salad dressing, cream in coffee or tea, gravies and sauces. Visible fat should be trimmed from the meat to be consumed by weight-watchers, also. Seasonings that have practically no calories, such as spices, herbs, vinegars, tart fruit juices and mushrooms add harmless luxury touches to make meals inviting. Artificially sweetened foods available on the market for the pound-conscious give variety and gratify any craving for sweets. Preparing attractive, nutritious, calorie-right meals can become a fascinating challenge for the dieter.

Fad diets, which appear in newspapers and magazines with an amazing degree of variety and regularity, are unfortunately widely accepted. These diets may stress either the elimination or the predominance of particular foods or combinations of foods and are sometimes prepared by people who have little or no knowledge of nutrition. Fortunately, fad diets are usually short-lived, as people who are addicted to them shift from one to another with considerable rapidity before any one of them has an opportunity to do much damage. Vitamins are not the panacea of all ills, either, although some people use them as a substitute for a well balanced diet. Good nutrition has no substitute.

Coupled with food fads are all the erroneous notions about food that have accumulated and been passed along from generation to generation. These include the belief that milk is good for children but not for adults, while in reality it is a superior source of protein and calcium for everyone. There is also the claim that pasteurization of milk lessens its nutritive value, although, actually, pasteurized milk contains all the good qualities of raw milk and yet is incapable of spreading infectious disease. Another common false belief is that milk or ice cream should never be eaten at the same meal with lobster. Any food which causes no reaction when eaten alone can be eaten without danger of poisoning in combination with any other harmless food. Who has not heard that cheese is difficult to digest and causes constipation? Careful tests have shown that it is easily digested, even by very young children.

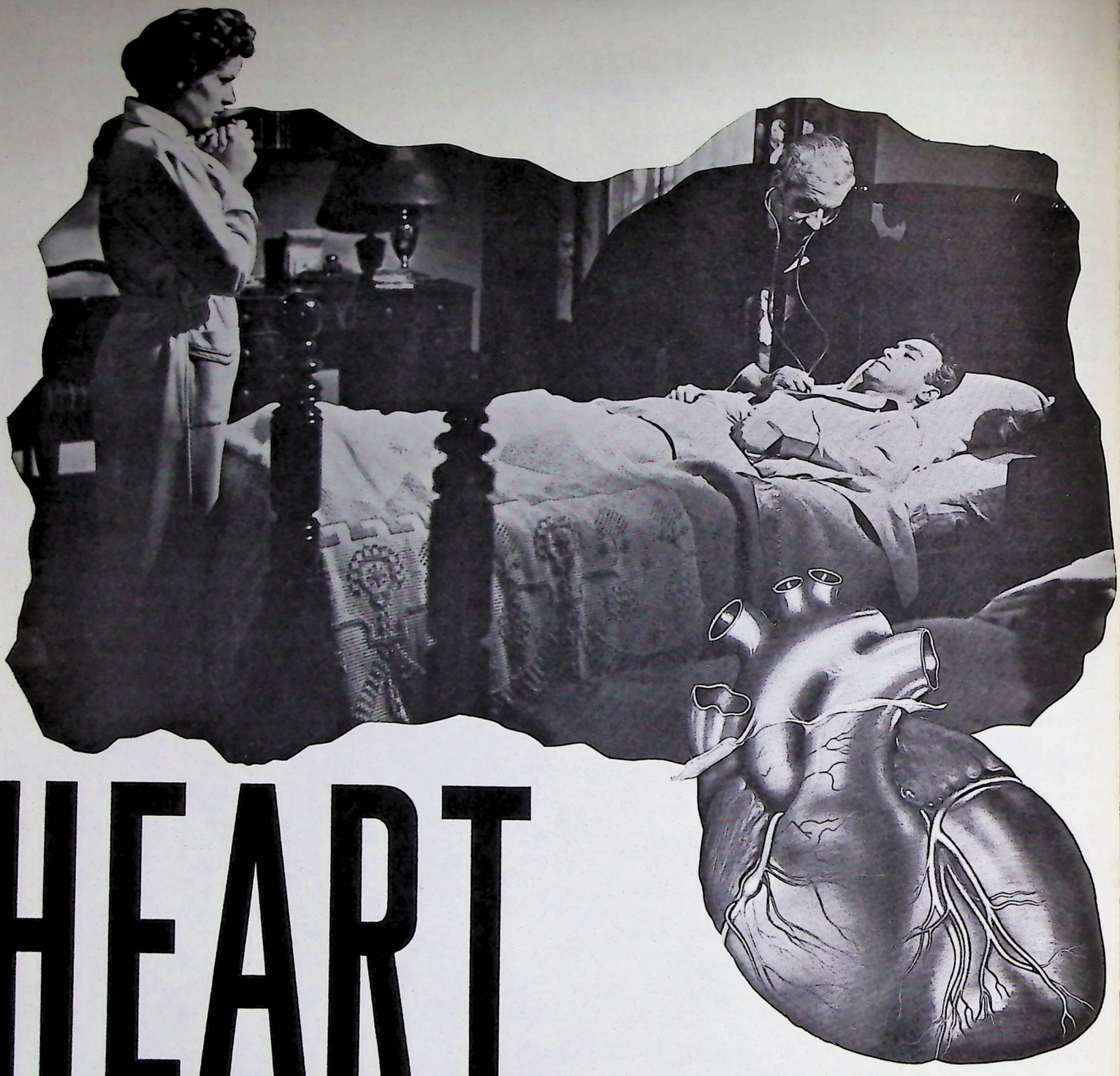
Conflicting notions, reports, beliefs and superstitions may well leave the conscientious housewife confused as to whom and what to believe when it comes to feeding her family. When in doubt as to the authenticity of an "expert" in the nutrition field, or in regard to the truth of some allegation regarding the beneficial or harmful effects of various foods or diets, inquiries can be made of the family physician, local health officer or public health nurse. Reliable information can also be obtained from government food and drug laboratories and from medical associations.

Although many doctors have no objections to the nine-hundred calorie milk formulas now flooding the market, as these formulas represent fairly complete foods, they do question whether formula dieters will ever make the psychological or physiological adjustment to the idea of eating smaller portions of foods — an adjustment so necessary to maintaining weight loss. They also point out that marked and repeated fluctuations in weight are more damaging to health than a constant state of slight or moderate overweight.

Thus, the problem of weight control keeps coming back to the same fundamentals of nutrition — only an expenditure of more calories than are consumed will take off weight and it is easier to keep weight off than to take it off. Good nutrition is so readily available and is of such infinite importance in terms of good health and long life that there is really no excuse for improper diet. Senility, for instance, is not the necessary result of wear and tear, but rather of improper use of the body and of habitually subsisting on a diet which does not maintain the tissues at their highest degree of vitality.

The bodily condition known as "old age" or senility, while it almost invariably develops sooner or later, is not the inevitable result of living a certain number of years and may be long postponed, or even prevented entirely, by the right diet and manner of living. On the other hand, inadequate diet and poor living habits may bring on premature old age. Some people are "older" in body at forty than others at eighty. Those who succeed in retaining their youthful vigor in the later years are usually those who are mentally and physically active and who maintain their weight at the proper level by proper nutrition.

There is more to eating than nutrition, however. Although America is among the best fed nations in the world, many people have made eating merely a mechanical matter of refueling the body, ignoring the delightful pleasure of eating tasty and attractively prepared food in pleasant surroundings. Taste need never be sacrificed for food values. There is no single item of food that is so important that it must be eaten simply because it is valuable to nutrition, or so unimportant that it must be eliminated as valueless. Eating a nutritionally balanced diet is not only healthful, but it can and should be fun! ♦



HEART ATTACK

The Big Killer – Man's Deadliest Enemy

THE fact that diseases of the heart and circulation are now the chief cause of death leads the uninformed to fear heart disease as a death sentence. The dramatizing of occasional sudden deaths from coronary thrombosis intensifies the fear of heart disease. Fear crowds out facts — the facts of medical advances in the conquest of heart disease and the fact that an overwhelming majority of cardiacs live long and useful lives. The truth about heart disease dispels fear; many individuals afflicted by the disease can and do lead normal, active lives.

The heart and blood vessels send out a vast assortment of aches, pains, twinges and flutterings, resulting in murmurs, palpitations, fainting spells, cold feet and a number of other symptoms. Any or all of these may signify heart or blood vessel trouble — or they may mean nothing more than that the feet are cold, or indicate overindulgence in food or just plain jitters.

The importance of heart disease cannot be minimized, however, so it is well to take heed of all these symptoms and to have them checked by a physician. Most of these symptoms do not indicate trouble and once a physician has checked them, they can be forgotten or eradicated. It is far from rare to find complete invalids who got that way from no organic cause, but simply because of their terror over some of these symptoms, which, upon proper examination, may well turn out to be completely harmless.

In those instances where the physician finds that the symptoms do indicate trouble, early diagnosis and prompt application of the best methods of medical management are essential to effect recovery or to halt further deterioration. When the patient with heart disease is lucky enough to find out about his condition early and is wise enough to cooperate with his physician, he has every chance of a useful, satisfying and long life. Many heart patients, under good medical management, live more than twenty or thirty years after diagnosis and some live even beyond the normal life span. The miracles of medical science have conquered many of the dread diseases which once scourged mankind and advances in public health have controlled the spread of disease so that in the past few decades life expectancy in the civilized world has been extended by more than seventeen years. This increases the percentage of older people in the population and is responsible in large part for the statistical increase in heart disease.

Almost everyone is familiar with the term "heart attack," but not many people know what it means or realize that the great majority of people survive their first attack. A heart attack or coronary thrombosis, like most heart disorders, can be stripped of some of its terrors by a better understanding of how it occurs. The walls of the heart consist mainly of a special kind of muscle which receives its entire supply of blood through two coronary (meaning crown) arteries. The term "heart attack" usually means the sudden closing — occlusion — of one of these arteries, or a branch of one, by a blood clot — thrombus. This condition, which usually but does not always cause severe pain in the chest, may be accompanied by weakness, pallor and sweating. It never occurs in a normal artery, but only in one previously thickened or roughened by disease. The pain is often attributed to "acute indigestion" and in many instances, in people who are not sensitive to pain, it is ignored entirely.

When unusual chest discomfort occurs, the doctor should be notified. The severity of the coronary attack depends on where the obstruction occurs. A clot in the main coronary artery may be fatal, but most often clots form in one of the smaller branches, causing attacks which are seldom fatal. When an artery is blocked by a clot, a calcium or fat particle, or a hemorrhage into the inner lining (the intima), the tissues beyond the clot are deprived of their blood supply, necessitating replacement by scar tissue. White cells (phagocytes) stream through the ruined tissues and carry away the dead matter. Then, almost miraculously, within a few days, new blood vessels grow from the sides of neighboring healthy arteries and spread into the borders of the affected area. Eventually, special cells called "fibroblasts" replace, with scar tissue, the dead area which is known as a "myocardial infarct" — *myocardium* being the Latin name of the heart muscle and "infarction" meaning death of tissue caused by loss of its normal supply of oxygenated blood. The term indicates that a portion of the heart muscle has died because the vessels which formerly supplied it with blood have been closed.

Until quite recently, a victim of myocardial infarction was put flat on his back for three months or longer. Today, the heart patient still goes to bed as soon as the coronary occurs, but he is allowed to sit up after three or four weeks, sometimes even earlier. In the early stages of the attack, oxygen, sedatives and other medicines keep him comfortable and aid blood flow from neighboring blood vessels. To counteract the possibility of further clotting, he is encouraged to do gentle leg and foot exercises frequently, as this prevents "pooling" of the blood in the veins in his legs. Most often, he is put on anticoagulant drugs, such as the Coumarins and Heparin.

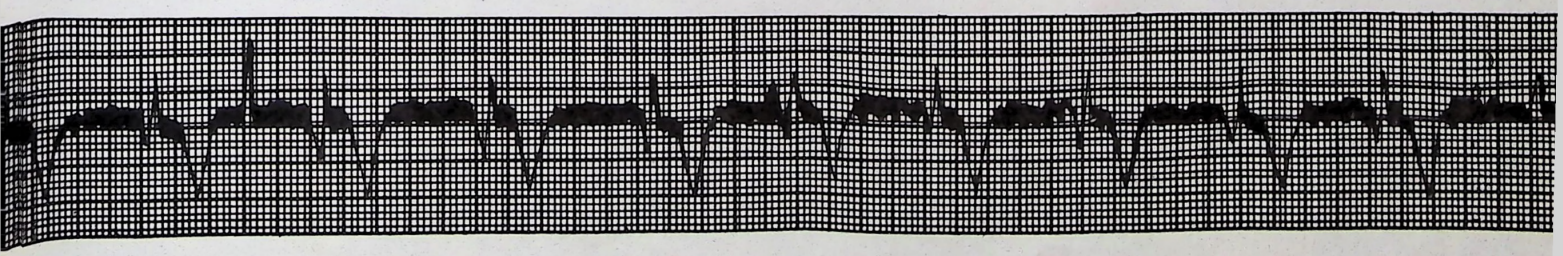
The first two weeks are the most critical. The original clot may extend and damage a larger area of the heart muscle or a piece of it may break off and block another artery. These are the reasons that anti-coagulants are used. There is always the possibility of congestive heart failure, resulting in swollen and congested veins. This can be treated with drugs like digitalis, which strengthen the heartbeat, and salt limitation and diuretics, which aid the body to eliminate excess water.

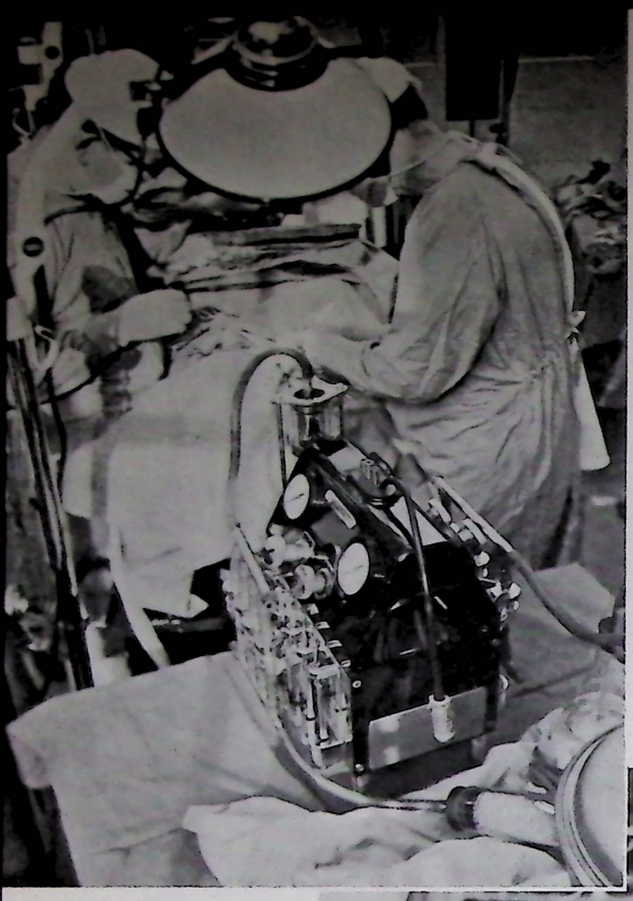
Science is constantly developing new techniques, drugs and adding knowledge that make convalescence faster, surer and less painful. While ten to fifteen years ago there were only three or four heart operations, now there are scores. Heart-lung machines which take over the task of pumping blood through the body permit many operations that previously could not be attempted. Synthetic arteries replace damaged ones. A machine massages hearts that stop beating during surgery; another photographs the heart's action three-dimensionally and a third televises a brilliant view of the heart to doctors in another room. A variety of other devices make the doctor's work easier and surer. Anti-coagulants, drugs to reduce high blood pressure and others to dilate blood vessels, also assist in rehabilitating the patient.

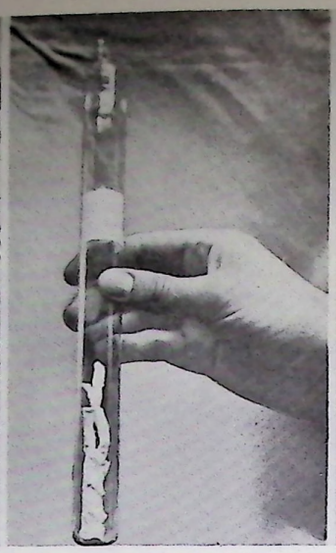
More than eighty per cent of all patients who recover from heart attacks can return to work and are encouraged to do so, as unduly long periods of idleness cause more damage, physical and psychological, than the attack itself. The need for specialized advice to guide heart patients in resuming work has led to the establishment of work evaluation units in many localities. A work evaluation unit may be part of a cardiac clinic or rehabilitation center and serves to assess a person's work capacity and to learn how much and what kind of work he can safely do.

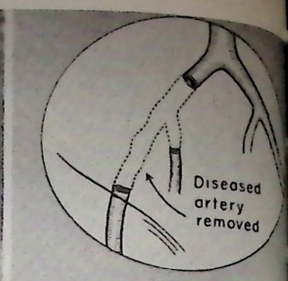
The staff of each unit includes many experts, who estimate the work capacity of a patient by considering many different facts about him, including his heart condition, history, age, previous work, present health status, emotional state and results of various tests. Each case is individual. A number of employment or work agencies, prospective employers or private physicians, refer patients to the clinic unit. By keeping in touch with patients, the units have learned much about the success of cardiac patients in returning to work and they have demonstrated what people can do when placed in jobs suited to their physical capacities.

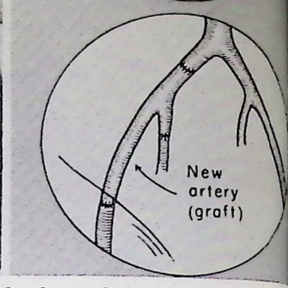
Heart attacks are as common among women as men after middle age, but before the age of forty, 25 men suffer attacks to every woman. At a recent conference of health executives, a panel of leading physicians concluded that the junior executive striving for the top, rather than his boss, or the white-collar worker, beset by frustrations, is the



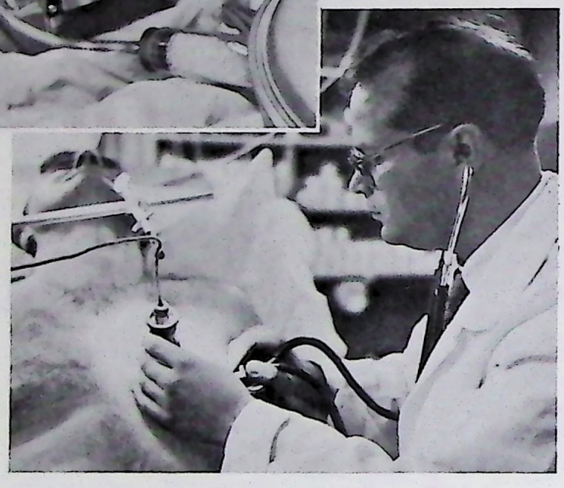




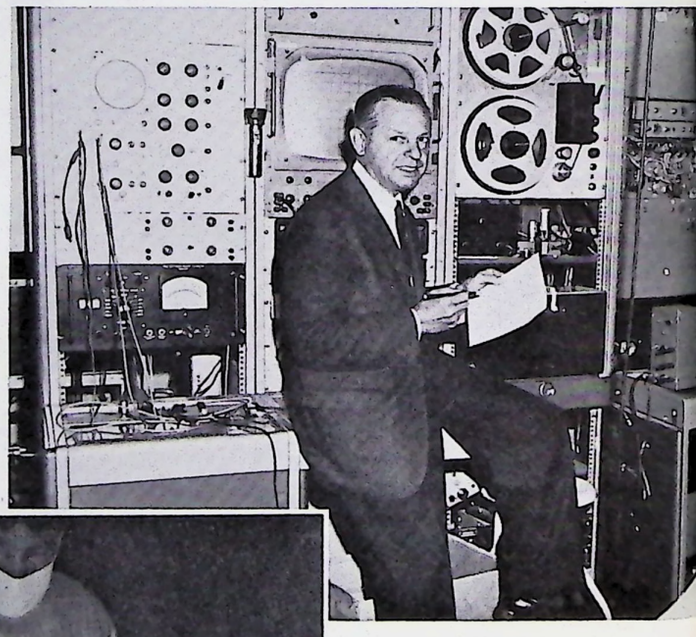


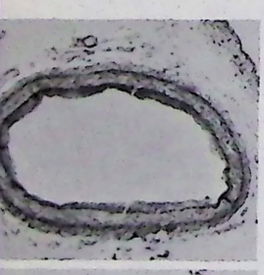


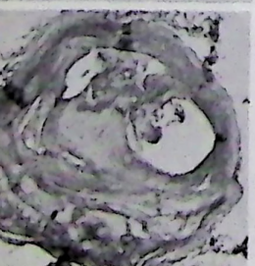
An artificial heart-lung (left), takes over the function of maintaining the blood supply of a patient's body while his heart is opened and repaired by surgeons. It enables the surgeon to do by direct vision what he formerly had to do by touch. Both real artery grafts obtained from banks and artificial arteries made from plastics, like Teflon (above), can be used to replace those damaged by disease. A variety of tests (below left), are employed by rehabilitation clinics to determine the exertion and stress which a patient can withstand, following recovery from a heart attack. Over 80 per cent of heart victims eventually return to work.

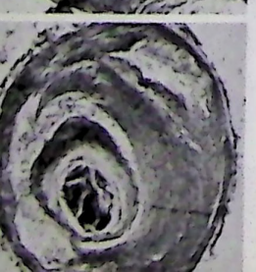


Dr. Clarence M. Agress, Heart Specialist and Chief of the Department of Cardiology at Cedars of Lebanon Hospital, Los Angeles, is shown with electronic equipment which he, along with a team consisting of doctors, electronic engineers and physicists, is now developing for medical research. This device will analyze 12 channels of information simultaneously, thus providing analyses of a single heartbeat in terms of its electrical and mechanical energy. Research of this type is leading to earlier detection of heart disease.









Starting with a normal coronary artery in the top photograph of this series of cross sections, it can be seen how a coronary artery becomes clogged with deposits of fat which accumulate and narrow the artery until it is finally blocked by a blood clot. When a clot (thrombus) cuts off the only blood supply to a section of heart muscle, the result is death of the muscle—heart attack. Although the heart attack itself is usually sudden, the process of increasing arterial narrowing leading to it, known as atherosclerosis, takes many years to develop.

The surgeon in the heart catheterization laboratory is shown threading a long, thin tube (cardiac catheter) through an arm vein into the heart. By means of this technique, much information is gained about the pressures inside the heart chambers and the presence of abnormal communications between the heart chambers. In addition, samples of blood can be taken at different levels for oxygen analysis, since the mixing of venus and arterial blood aids the doctor in the diagnosis of congenital defects.

most likely candidate for heart trouble. He is likely to be short, stocky, muscular and large-boned, tending to be bald. His personality is often one of unrelenting, driving ambition. Add a rich diet, sedentary habits, lack of exercise and excess in alcohol and tobacco and he may well be headed for trouble.

In a recent study of six thousand executives, it was found that American businessmen are not working themselves to a premature death. Quite often the healthiest executives were among those who put in the longest days and did the hardest work. Results indicated that there is no particular health hazard to the job of being an executive — any health hazard is the result of a man's routine of living, outside the office.

Heredity — which, of course, is uncontrollable — is considered one of the primary factors contributing to a heart attack. Although the reason is not known, persons with two or more cases of heart disease in their families are subject to death rates about twice as high as others. While there is no laboratory proof that obesity has an adverse effect on a healthy heart and arterial system, longevity statistics indicate that obesity is important in the production of heart disease. It is clear to doctors that the more tissue a weakened heart must service and maintain, the heavier will be its work load.

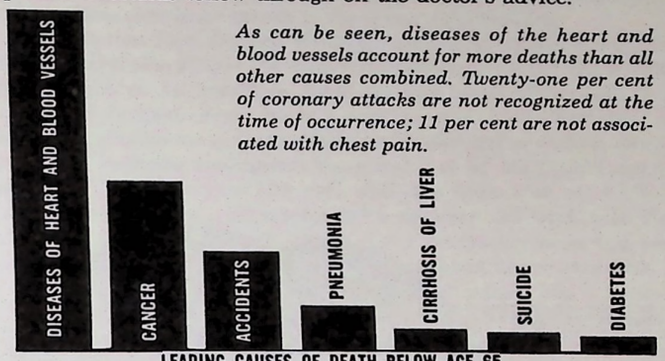
Overweight results from the consumption of more calories than are expended and since the major source of calories is fat, a double blow may be struck by eating fewer calories, for the fewer eaten, the less fat consumed. The consumption of fats has steadily increased in the American diet and the increase has paralleled the increase in the cases of coronary thrombosis. Cholesterol, which is a yellow-white fatty chemical found in eggs, meat, butter, milk and cheese, is considered the villain by many highly respected American scientists — a chief cause of hardening of the arteries. There is, however, no positive evidence as yet that the high fat content of the American diet dangerously increases human cholesterol levels and many other respected scientists do not believe that cholesterol causes atherosclerosis — a narrowing of the walls of the arteries. The body produces its own cholesterol, which it needs to build cells and to manufacture important hormones.

Constant high blood pressure, or hypertension, weakens arteries and overloads the heart, thus playing a role in the development of atherosclerosis. Coronary artery disease, also more prevalent among smokers than non-smokers, occurs at an earlier age in smokers and the risk increases with the number of cigarettes smoked per day. Stress and tension may also be contributing causes, but perhaps only as an aggravation to an existing condition.

Research has indicated a high correlation between infection, shock and heart attacks, particularly among the elderly. A bacterial infection such as pneumonia results in an invasion of the blood by bacteria. For reasons not yet clear, shock occurs after such an invasion. Shock, which can be described as a failure of normal blood flow, results in a drop in blood pressure. If the pressure drop is sufficient to decrease blood flow to a vital organ such as coronary vessels, already plugged by fatty deposits, death may result. Using experimental animals, evidence was gathered indicating that the bacterial poisons released after they have been killed by antibiotics cause blood vessels to balloon, thus reducing the blood pressure and triggering the sequence of events.

Despite the fact that doctors do not entirely agree on the exact cause of heart attacks or why the most common factors involved produce heart attacks in some people and not in others, they are generally agreed that in view of present evidence certain steps can be taken to minimize the probability of heart disease. Since overweight is the outstanding health hazard today, it is important to establish one's proper weight and then to maintain it through proper daily diet. Eight hours of sleep out of every twenty-four contributes to the good health that helps ward off disease of any kind.

Exercise is a vital necessity in keeping the body machine working at its best. Walking is the best exercise because it is available to everyone and requires no equipment. Moderate exercise, taken daily, is wisest. Golfing, swimming or working out in a gymnasium are especially recommended, but physicians warn against strenuous weekend exercise for those who do sedentary work during the week. Wives can play an important part in helping their husbands avoid heart attacks by maintaining a harmonious low-keyed atmosphere in the home, free from petty annoyances and needless household chores. They should supervise diet and rest and insist on periodic medical check-ups and then help their husbands follow through on the doctor's advice.



As can be seen, diseases of the heart and blood vessels account for more deaths than all other causes combined. Twenty-one per cent of coronary attacks are not recognized at the time of occurrence; 11 per cent are not associated with chest pain.

LEADING CAUSES OF DEATH BELOW AGE 65

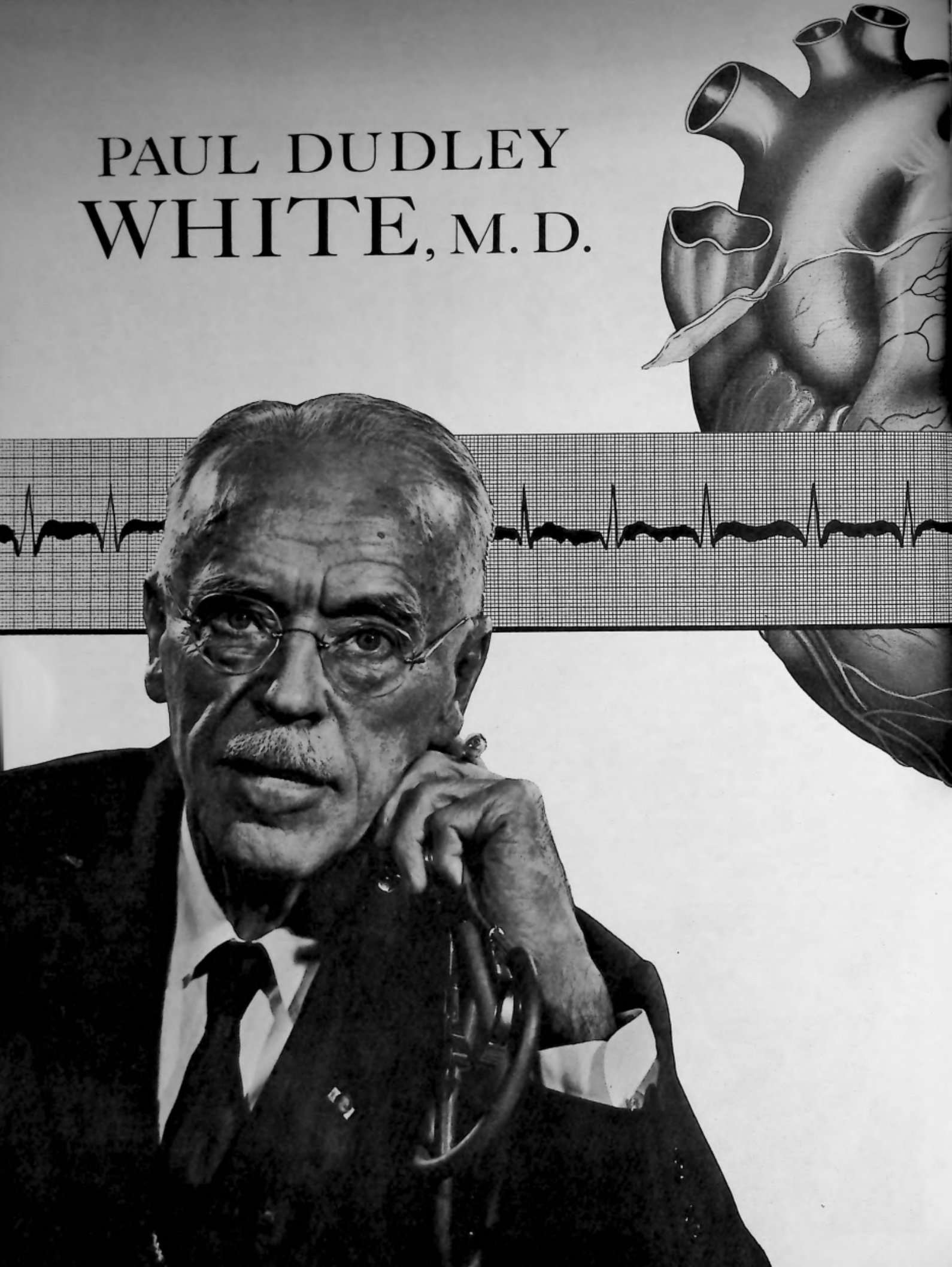
Although still in the testing stages, new means of predicting heart attacks with rather decisive results have been disclosed. In one method, it was discovered that those who have suffered from heart attacks react to ordinary situations differently from persons with no background of the disease. The subjects listened to a tape recording designed to cause irritation while a lie detector was employed to register their reactions. The heart disease victims registered a rapid rise in the respiratory wave when inhaling and moved about twice as much as the normal subjects. They also tended to hasten the interviewer's rate of speaking by interrupting before the interviewer had concluded his questioning.

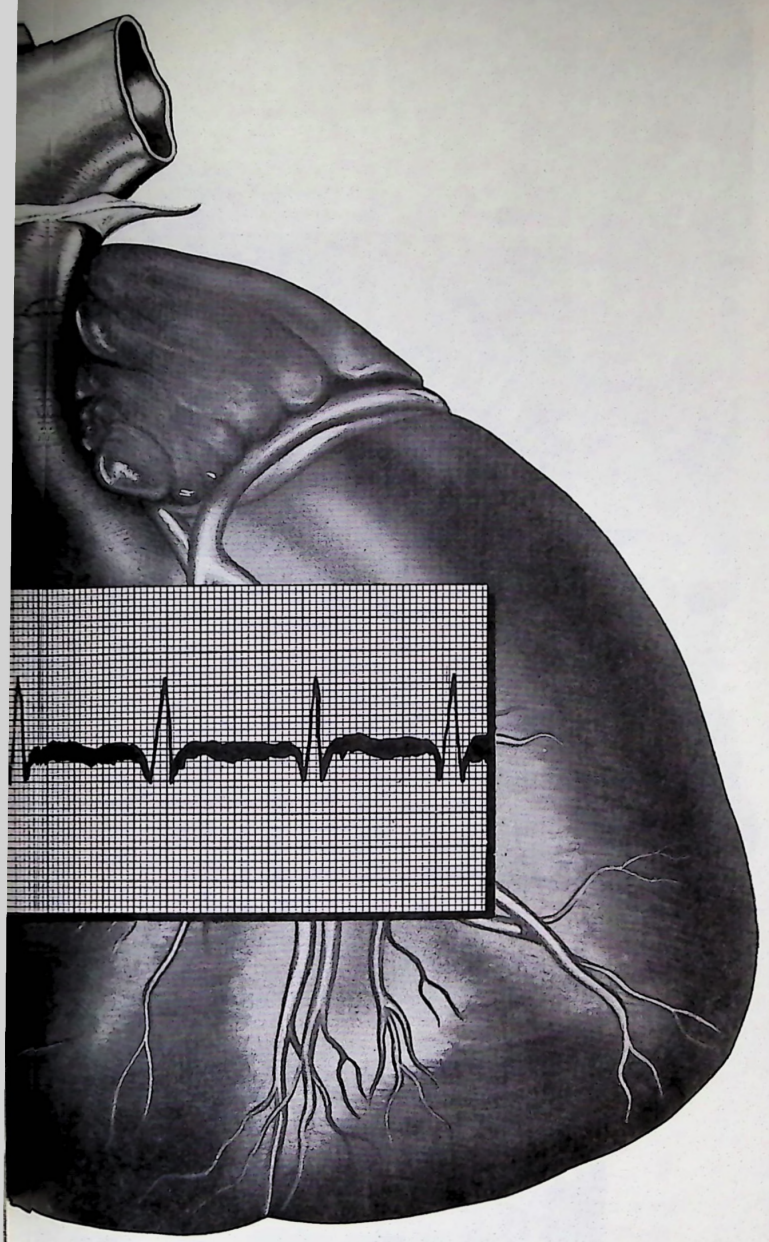
A simple, seventeen-minute test has been developed to predict whether the heart is getting enough blood to do its job — the vital factor in heart attacks. The test requires three devices often used for other kinds of medical work: a scintillation detector, which is a tube-like device that can detect the activity of radioactive substances injected into the blood stream, a rate meter and a recorder.

The evolution of knowledge concerning heart disease — how to diagnose it, treat it, predict it and predict the future for its victims — has advanced tremendously in recent years. This growth in understanding has not only saved countless lives, but banished many of the fears formerly connected with the disease. The campaign of public education conducted by the American Heart Association and the millions of dollars from public donations and government funds spent annually to aid research on the heart have contributed much to this advancement — an advancement that is continually adding fearless, pain-free years to man's life expectancy. ♦

The world was shocked when 4 of Hollywood's most famous and beloved motion picture stars, Clark Gable, Tyrone Power, Mario Lanza and Ronald Colman, suddenly succumbed to heart attacks while still at the peak of their brilliant careers. Earlier detection of their condition by a doctor, proper eating and regular exercise habits and use of some of the many recent discoveries for prolonging life in patients with heart disease might well have contributed to longer lives for these personalities. Control of hypertension and diabetes, control of thyroid, kidney and vascular diseases — all are available to every man, woman and child today.

PAUL DUDLEY WHITE, M.D.





WISDOM PAYS TRIBUTE TO THE WORLD'S MOST FAMOUS HEART SPECIALIST ON HIS 75TH BIRTHDAY AND 50TH ANNIVERSARY IN MEDICINE

SOME recipients of the world's greatest honors are conspicuous by reason of their exceptional intellectual stature and attainments. Paul Dudley White, M.D., certainly belongs among these few. The prestige of medicine has always been particularly high and revered and the contributions made by Dr. White have perhaps exalted it in a way that no other exponent has ever done before or since. His work, from one decade to another, has formed a coherent and logical construction. By studying the workings of the cardiovascular system in their elementary manifestations, Dr. White has been able to build up from simple things to complexities without being distracted by non-essentials.

The name of Dr. White is linked to no epoch-making discovery such as that of the circulation of the blood, the introduction of a new science such as bacteriology, or the relief of humanity from some great scourge such as smallpox. But Dr. White represents the finest of all that is best which has gone before in medical art, science and tradition. His life covers the seventy-five years which is the period of the greatest development that has ever been known in the history of medicine.

Why is it that Paul Dudley White stands out so loftily among other physicians and also among the whole congregation of heart researchers? Perhaps because he combines three distinct accomplishments in an exceptional fashion. First, he is a man of very high character. His personal attributes are quite unusual. He is esteemed as well as admired by men of medicine throughout the world and by his pupils and colleagues. Those who know him well, and also those who meet him on a more superficial level, often refer to his modesty and kindliness. He is generous with his help and advice and a succession of young heart specialists have taken advantage of his benevolent approachability. He is a quiet and essentially a good and unassuming man. His is a modest charm, in which the softer shades of genial warmth and sincerity become increasingly apparent with long acquaintance.

To these exceptional character traits must be added his culture. A scholar versed in the humanities, he has maintained his love of the classics throughout his life. He reads widely. He collects books. Medical history intrigues him and he has contributed much by his detailed studies of the historical men of medicine. His mode of thinking is reflective and with advancing years, he has become more and more philosophical. He seeks to probe the fundamentals, for he cannot tolerate obscurity or uncertainty when they touch upon problems of life. We must add to these capacities his not inconsiderable writings. An indefatigable worker, he writes voluminously and possesses the power of expressing himself clearly and interestingly. His personality can be easily judged from his writings. These reflect a kindly man of great intellectual power, of calm and judicial temperament, accurate and careful in observation, possessed of a high sense of the dignity and lofty ideals of his profession.

Finally, Dr. White is a medical scientist, in the most strict sense of the word. He leaves no branch of medical learning unexplored and he extends medical knowledge in many directions, more particularly in his investigations of the human heart. His mode of thinking is speculative, but it is so rigidly disciplined that it never offends the rules of logic which ordain and govern the mental processes of deduction. He has the particular ability to seize upon the core of a problem and strip away irrelevancies as though they were the leaves of an artichoke. Dr. White's is one of the most brilliant intellects ever applied to the problems of medicine.

The unusual combination of these three faculties, namely character, culture and medical probity, account largely for Dr. White's greatness. But he enjoys other advantages, too. He is an uncannily dextrous laboratory technician, whose experimental methods are astonishing in their precision, tidiness and success. He does not shrink from hard work, and hours spent in the laboratory, office, hospital, clinic, library or study are given ungrudgingly—even enthusiastically. Dr. White was blessed with that somewhat intangible gift of being fortunate in his choice of career, in his early teachers — at school, in the university and abroad — fortunate in his appointments and in the medical problems which he selected for investigation. Furthermore, he was fortunate in his time, for he came to medicine at a most opportune moment. In addition, Dr. White is lucky in his possession of good health, which sustains him through hour after hour of work, year after year, throughout an exceptionally long and active life.

Born on June 6, 1886, Paul Dudley White was one of four children of Herbert Warren White and Elizabeth A. (Dudley) White of Roxbury, Massachusetts. Dr. White's father was a deeply conscientious man, an excellent prototype of the self-sacrificing horse and buggy family doctor of a now bygone era. His mother, a descendant of an early Massachusetts

governor, was a true New England gentlewoman, whose focus was her family, but whose humanity embraced the whole world.

Dr. White has said, "Although intelligence, hard work and patience are requisite for a useful and happy life in the field of medicine, Dame Fortune also plays a major role. I shall admit at once that I have been blessed with luck all along the way. Right at the beginning I was fortunate in having a father who, although born on historic Bunker Hill, was brought up on a farm without the handicaps of either wealth or poverty, was endowed with a large bump of curiosity and good health and was privileged to serve his community on the outskirts of Boston as a devoted family physician. My mother, also born in Boston, was a gentle soul full of missionary zeal for the suffering millions in remote parts of the world. This place of my own birth, as well as my parentage, was a bit of luck for me."

With parents of such lofty and noble aims as an example to him and the rich medical traditions of the Boston institutions of learning surrounding him on every side, it would seem that young Paul would turn as naturally to the study of medicine as a sunflower to the sun. However, Paul and his brother, Joseph, watching the selfless dedication of their father to the ills of suffering humanity, watching the irregularity of his hours, watching him being called away from home at any hour of the day or night – when he was eating dinner, enjoying company, at church, any time and all the time – vowed that they would never take up the study of medicine!

Paul and Joseph spent six years at Roxbury Latin School, which was founded by John Eliot. This school, the oldest private secondary school in America, was then located in an old building not far from where the Whites lived. Here, Paul learned history, mathematics, English, German and elementary and advanced Latin and Greek. Of the languages he studied, he feels that Greek has served him best because the background of the first scientific medicine, taught by Hippocrates several centuries before Christ, was in Greek and also because the bulk of our medical vocabulary is derived from the Greek. Paul's teacher, Clarence Gleason, did much to awaken his interest in Greek and with it, an eager desire to visit Greece – a desire which was later gratified.

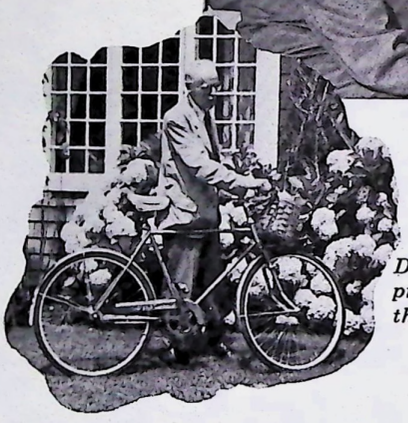
The old-fashioned family doctor of that day did not become rich from the practice of medicine and, while the Whites were not poor, it was necessary for Paul to win a scholarship in order to have the privilege of a college education. He had two goals in mind – either to be a history teacher or a forester – but as he was unable to decide which field he preferred, he majored in both studies until his third year in college. He then began to realize that his interests lay not in history or forestry, but in living human beings. Securing work as a tutor and charging each student two dollars a week (a considerable sum at that time), Paul earned enough money to pay for his formal education. In 1908 he was graduated from Harvard College with an A.B. degree. Knowing by now that medicine had claimed him for its own, Paul studied for the next three years at Harvard Medical School, acquiring his M.D. degree in 1911, followed by a two-year internship at the Massachusetts General Hospital in Boston.

Dr. White's first choice of a specialty in medicine was pediatrics, but the death of a sister from rheumatic fever may have served as a spur to awaken his interest in cardiovascular disease. The circumstances that gave him his real push into the study of the heart, however, occurred when a patient of a Massachusetts General Hospital staff member donated funds for an electrocardiograph to that institution. Because he was shortly to complete his service in the medical wards, Dr. White was, therefore, invited by Dr. David Edsall – later Dean of Harvard Medical School – to go to England to study electrocardiography and to bring back the electrocardiograph machine.

Loathe to leave his first love, pediatrics, but feeling Dr. Edsall's offer was too good an opportunity to refuse, Dr. White accepted. He spent a year in London at the University College Hospital Medical School, exposed to the mind of one of the greatest medical scientists of his generation, Dr. Thomas Lewis. In connection with his studies with Dr. Lewis, Dr. White learned routine electrocardiography from Dr. James Mackenzie. Dr. White returned to Massachusetts General Hospital in the fall of 1914. The electrocardiograph was installed in the basement of one of the wards and Dr. White proceeded to convey the instruction he had received from Dr. Mackenzie to his medical colleagues.

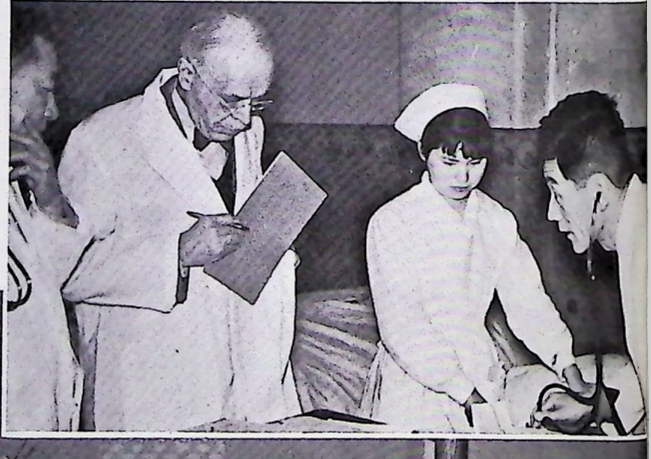
A short while later he returned to his first specialty, pediatrics, which he practiced on a part-time basis until he succeeded to the important job of running the Children's Heart Clinic at Massachusetts General Hospital. This institution was then closely allied with the House of the Good Samaritan, which treated cases of rheumatic heart disease.

Lectures on his research into heart disease hold eager audiences of doctors and laymen as Dr. White explains his theories. In April, 1961, he began another world-wide tour, during which he consulted with cardiologists in 9 foreign countries.

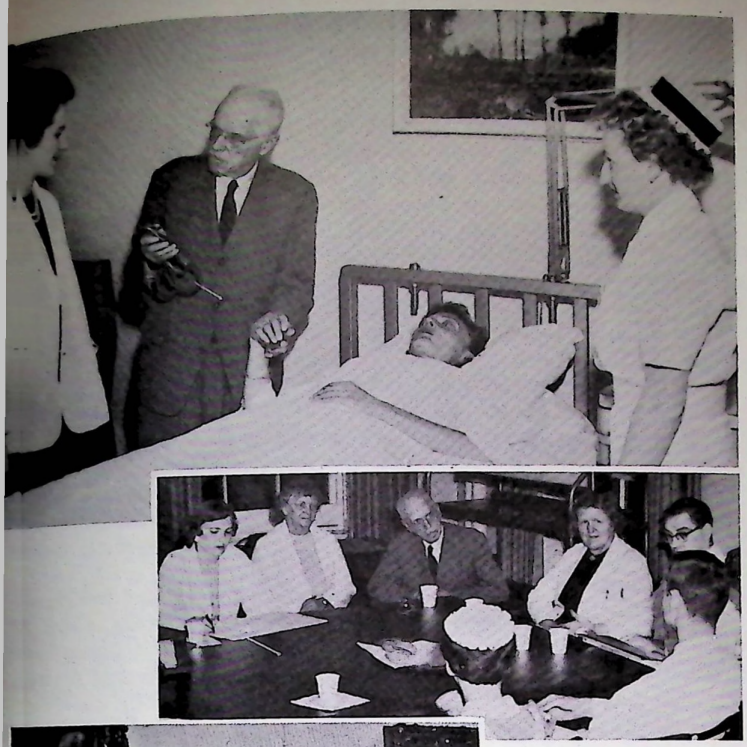


Dr. White practices what he preaches – cycling to strengthen the heart.

In the Orient, Dr. White found the low fat diet and low coronary death rate compared significantly with the high fat diet and correspondingly high coronary death rate in the U. S.



Dr. Ancel Keys (third from left), and Dr. White (third from right), collaborated on studies of the effect of diet on atherosclerosis in Japan, where the two prominent physicians were accompanied by their wives.



Associated with Massachusetts General Hospital for half a century, Dr. White visits a patient (top), and meets with the Social Service Department (above). Dr. White, one of the founders of the American Heart Association, with Mrs. Mamie Eisenhower and a rehabilitated heart patient, inaugurating a Heart Fund Drive.

An extensive medical research trip in 1956 took Dr. White to many lands, including those behind the Iron Curtain, where he conferred with other heart specialists on methods of combating coronary heart disease.

The trend of events at this time seemed to indicate that Dr. White was destined to become interested in the little esteemed and relatively unknown field of heart disease. He was warned by teachers and colleagues alike that it was folly to concentrate on such a limited specialty. However, Dr. White and some of the other young doctors felt strongly that entirely too little was known about this field of medicine and that exploration and research might prove exceedingly worthwhile. Although time has proved Dr. White's prognostication correct and he feels a natural satisfaction at having selected a specialty that has proved to be of such major importance, he has also felt chagrined at having to watch heart disease become the number one killer in our country today.

While the first World War gave those interested in cardiovascular disease little opportunity to advance their knowledge in this field, Dr. White, who served first with the British in France in 1916 and later with the American Expeditionary Forces in 1917, learned a great deal about a condition prevalent at that time. In the fall of 1916 there was an epidemic of what was then called "the soldier's heart"—"DAH" (disordered action of the heart), or "effort syndrome." British soldiers, unaccustomed to the strains of trench warfare, became afflicted with this strange malady and filled the base hospital where Dr. White was stationed. Their symptoms—disorders of breathing, heartache, palpitation, faintness, easy fatigability and nervousness—when exaggerated, were quite incapacitating and because the reason for soldier's heart was unknown, those suffering from it were labeled malingerers, cardiacs and psychotics. As the doctors were unable to find a cure for this condition, those suffering from it were sent to hospitals in England, such as Colchester, where Dr. Thomas Lewis and his associates studied them until the end of the war.

When the Americans arrived in France they, too, began to suffer from this condition. Continuing to pursue this illusive disease, Dr. White, in 1929, along with Dr. Hahn, completed and published a study of the illness, which concluded that it was not due to any form of heart disease. A follow-up study in the 1950's has revealed that this malady—the cause of which still remains a mystery, but which is believed to be brought on by stress—while extremely annoying, is benign and that those afflicted with it actually enjoy a longer life than people with normal hearts!

Prior to this, in 1919, Dr. White had gone on a Red Cross Relief Mission to Eastern Macedonia and Peloponesus in Greece to help fight a typhus epidemic. His efforts were rewarded with two decorations by the Greek government and he fulfilled his boyhood dream of visiting this ancient country. He was so impressed with Greece and its friendly people that he has visited it several times since World War I and has even become a trustee of Greece's Anatolia College.

When the war in Europe was over, Dr. White returned to the United States to resume his duties at the Massachusetts General Hospital, where, in 1920, he was appointed assistant to the physician in charge of consultive medicine and was ultimately placed in charge of the hospital's cardiac clinic and laboratory.

It was shortly after World War I that specialization in various branches of internal medicine came into vogue. Although this trend to specialize was resisted in the United States, the study of cardiology continued to advance, finally becoming a major specialty. In 1920, because the term cardiology was regarded with suspicion, Dr. White and those interested in this branch of medicine diplomatically referred to themselves as internists with a special interest in cardiovascular disease.

Past his middle thirties and with a considerable reputation in his specialty, Dr. White was invited to teach at Smith College. Here he met Ina Reid, who had graduated from Smith the year before and was taking a post-graduate course in psychiatric social work. The following winter she did psychiatric work at Massachusetts General Hospital and on June 28, 1924 she and Dr. White were married. They have one daughter, Penelope and one son, Alexander.

Dr. White played an important role in founding the American Heart Association in 1922 and from 1921 to 1924 he served as secretary of the section of pharmacology and therapeutics of the American Medical Association. A trip to London, Paris and Vienna in 1928 on a Mosley traveling fellowship permitted him to obtain added information and data for his remarkable book, *Heart Disease*, which was first published in 1931 and which is still regarded by the medical world as the standard text on this subject.

Dr. White, interested in defining the normal heart, conducted investigations and experiments with the ultimate findings that EKG (electrocardiograph) time intervals had to be widened to allow for the difference

in the size of the heart, that no EKG patterns were the same and that even patterns of identical twins differed. The results of these investigations were incorporated in a book, *Electrocardiography in Practice,* written in collaboration with Dr. Ashton Graybiel. Dr. White conducted further experiments which prove that the smaller the animal, the faster the heartbeat – and that conversely, the larger the animal, the slower the heartbeat. For example, he discovered that a mouse's heart beats one thousand times a minute; an elephant's thirty-five to forty beats a minute; an infant's twice as fast as an adult's. Two interesting works were the result of this research, *Heart of a Child,* published in 1932, and *Heart Disease in Practice,* published in 1937.

In 1940 Dr. White served as Vice President of the American Heart Association and from 1942 to 1944 acted as its President. He was also chairman of a special American Medical Association committee that presented a comprehensive exhibit on heart disease at Philadelphia in 1945. In 1948 Dr. White was made executive director of the National Advisory Heart Council and in 1952 he was a member of a government Point Four mission to Pakistan, India and Israel. During this same year, Dr. White was also presented with the American Medical Association Distinguished Service Medal. Shortly thereafter, he astonished his more conservative colleagues by embarking on a sailing expedition along the Alaskan Coast to research the heartbeat range in the animal kingdom. On this expedition he secured the first heartbeats ever recorded of a whale, using harpoons as electrodes to obtain the EKG readings of a one-ton white whale – fifteen beats to a minute. (The average human heart, weighing one-half pound, records seventy to seventy-two beats per minute.)

While an account of this expedition was appearing in a medical journal, Dr. White was off on another exciting adventure – this time to capture the heartbeats of the world's largest known mammal, the forty ton, forty foot gray whale, whose heart weighs in excess of two hundred pounds. Even with the assistance of the Air Force, Douglas Aircraft Company and the National Geographic Society, Dr. White was unable to bag this elusive mammal but, like all good fishermen, he is determined to try again.

On September 24, 1955 Dr. White was suddenly catapulted into the national spotlight by being called to Fitzsimmons Army Hospital at Denver, Colorado, as a consultant to Major General Howard Snyder and other Army doctors in treating President Eisenhower, who had suffered a heart attack. In spite of his prominence and outstanding reputation in medical circles, Dr. White's treatment of this famous and vitally important personage became the introduction of the general public to the quiet, energetic doctor from Boston with the twinkling blue eyes and sprightly manner.

While the nation hung on his every word through press reports and television interviews, his exciting years of research and accomplishment in the field of cardiovascular disease suddenly became an object of eager interest and intense curiosity to the entire country. Acting as spokesman for the White House doctors in meetings with the press, Dr. White's calm manner and great wisdom in handling this serious crisis did much to reassure an anxious nation. Many people, thinking President Eisenhower may have exercised too much at golf and other sports, were surprised to learn from Dr. White that this love for healthy exercise may have been the very factor that prevented the President from suffering a heart attack twenty years sooner.

This characteristic calmness, so emphasized by the television camera, inspires confidence and affection in Dr. White's patients and brings with him to the sickbed resourcefulness, sympathy and the assurance of help. His reputation has gained a world-wide public audience and in this way he is able to exert an important influence in matters of public health. In the campaign which has been waged so successfully by the American Heart Association against heart disease through public education, Dr. White's pen and voice have played a willing and useful part. Rarely has the work of a man come to be so fully appreciated during his lifetime.

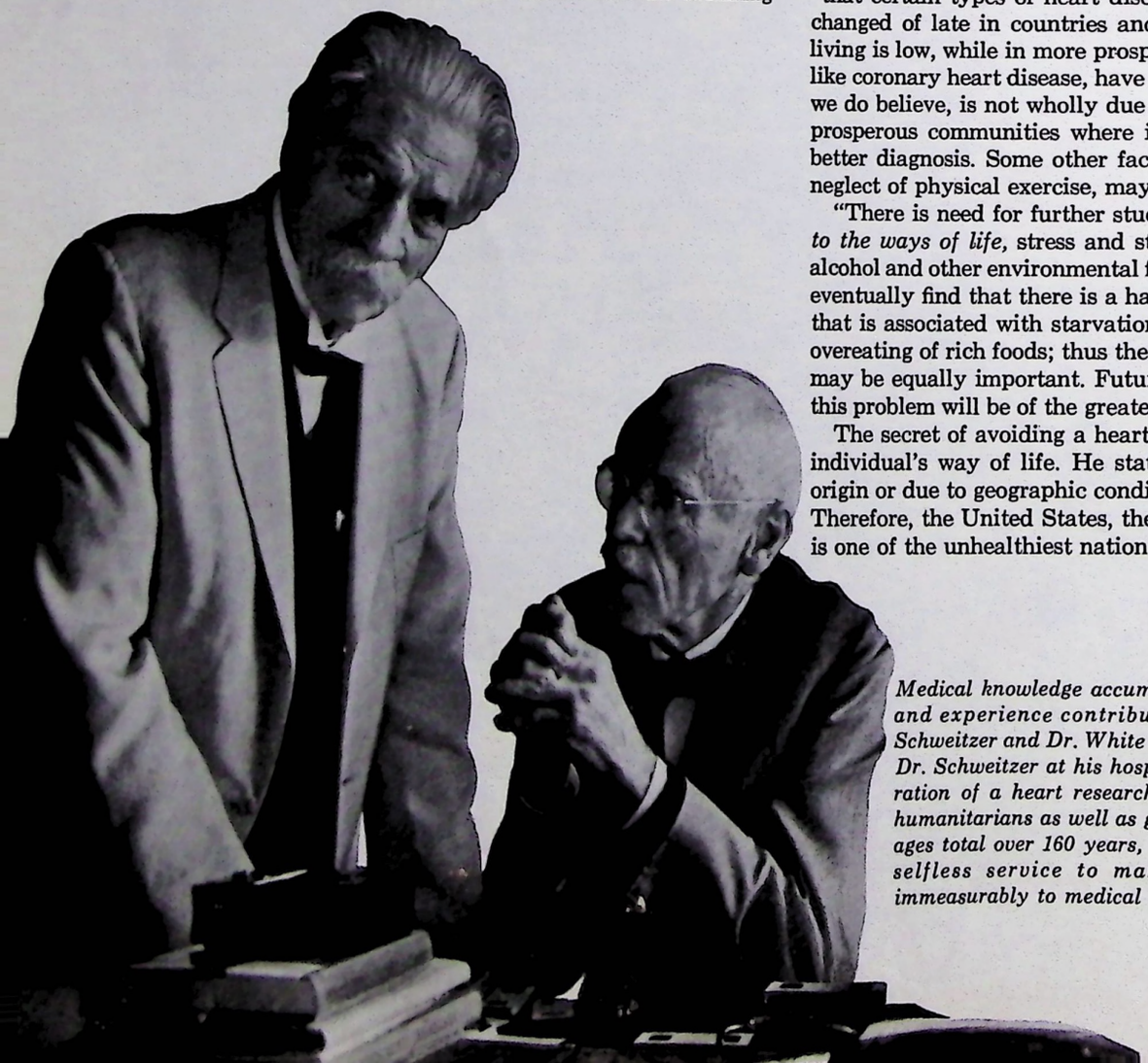
Dr. White's medical career has been action packed and punctuated with awards and decorations from many foreign countries as well as from his own. In addition, numerous societies and other groups have honored him for his outstanding contributions to mankind through years of study and research in the field of heart disease. To fully list all of his attainments, as well as awards and decorations, would easily fill a good-sized book. It is sufficient to say that every country in the world recognizes and honors him as one of the foremost authorities on the heart.

What is basically most interesting, at a time when heart disease is making major inroads on our population, are Dr. White's ideas on what factors most generally contribute to this vicious malady and the best way to avoid becoming its victim. On this subject, Dr. White has willingly and eloquently given his views.

Dr. White states that doctors have observed that in some countries, certain types of heart disease – such as those which result from rheumatic fever and congenital and inherited factors – have not increased, but in other countries, people are more prosperous and coronary heart disease has been constantly and alarmingly on the increase. "It has been apparent to those of us who have traveled widely," Dr. White maintains, "that certain types of heart disease are still common and not greatly changed of late in countries and communities where the standard of living is low, while in more prosperous communities certain conditions, like coronary heart disease, have apparently been on the increase. This, we do believe, is not wholly due to an increased longevity in the more prosperous communities where infections have been controlled, or to better diagnosis. Some other factors, quite possibly over-nutrition and neglect of physical exercise, may be at fault.

"There is need for further study of the *relationship of heart disease to the ways of life,* stress and strain, physical exercise, diet, tobacco, alcohol and other environmental factors. The challenge is there. We may eventually find that there is a happy mean between the under-nutrition that is associated with starvation and the over-nutrition that is due to overeating of rich foods; thus there are two kinds of malnutrition which may be equally important. Future research during the next decade on this problem will be of the greatest importance."

The secret of avoiding a heart attack, believes Dr. White, lies in an individual's way of life. He states that heart disease is not of racial origin or due to geographic conditions, but is linked to economic levels. Therefore, the United States, the most prosperous nation in the world, is one of the unhealthiest nations in the world. Its citizens are overfed



Medical knowledge accumulated by more than a century of study and experience contributes to the discussion when Dr. Albert Schweitzer and Dr. White exchange ideas. In 1959 Dr. White visited Dr. Schweitzer at his hospital in Lambarine to discuss the inauguration of a heart research program in that area of Africa. Great humanitarians as well as great doctors, these men, whose combined ages total over 160 years, have gained world-wide renown for their selfless service to mankind – a service which has added immeasurably to medical knowledge and has saved countless lives.

and under-exercised. Americans, with their push-button living and luxurious automobiles, have lost the use of their legs. The best formula for avoiding a heart attack, Dr. White emphasizes, is *constant exercise* throughout life, including the time of old age!

After people reach adulthood, Dr. White has observed that they usually discontinue the exercise which was natural to their youth. Young people marry, acquire a car and a television set. The woman, in her anxious efforts to be a good wife, entices the husband with her culinary accomplishments. He enjoys the rich food which she has so lovingly prepared for him — and he overeats. By the age of thirty, he is flabby and overweight. He is a likely candidate for that dread killer, heart disease, which has been lurking in the background, gleefully watching the young man preparing a fertile field for swift and relentless attack!

It is possible, believes Dr. White, that the foundation for heart disease may be laid in childhood, for it is highly probable that our children are overnourished. However, keeping the middle-aged — that vital group which sustains a nation — physically fit is the number one public health problem today. People in this age group are the ones most likely to be struck down by heart disease.

Dr. White feels that every city, as well as every suburban area, should include in its future plans provision for bicycle paths and plenty of sidewalks. Proper exercise keeps the blood pumping through the body and keeps the arteries of the heart open. Proper diet eliminates the danger of cholesterol collecting in the arteries and plugging them. He states that a combination of a sensible diet and adequate exercise seems to be the major factor in preventing heart disease.

Dr. White is a man who practices what he teaches: he has been riding a bicycle since he was a boy. He rode a bicycle as a college student and in later years he and his wife took many bicycle trips in Europe, which he advocates as a delightful and inexpensive way to see a country. At the White home in the Boston suburb of Belmont, the wiry and seemingly tireless Dr. White can be seen mowing the lawn in the summer and putting up the storm windows each fall. A man of great activity who has always enjoyed excellent health, Dr. White seems to be able to eat anything he desires without gaining weight and, unless his wife sidetracks his conversation at the dinner table, he will spoil everyone's dinner by talking about the vital need to keep weight down.

Dr. White is a foe of early retirement. He believes that people who retire too soon invite premature deterioration. Dr. White is a classic example of his own theory. On April 17 he left on another world-wide tour in the interests of heart research. At the age of seventy-five, he is in the midst of an exciting career which holds brilliant promise of even further usefulness to humanity.

Influencing medicine by no revolutionary discovery of his own, but by researching, espousing, explaining and teaching all that is best in medical thought, Dr. White exercises a great influence in the betterment of the knowledge of the modern physician. He also exerts an important influence on his profession through his writings and speeches and, in addition, to a great degree through the various medical societies and associations. He is in demand as a speaker and frequently reads papers at meetings and writes articles for journals. One of the most widely known physicians of our time, whose career is crowned with success and accomplishment and with the universal respect and affection of his fellows, Dr. White attributes his success to his industry. The master word of medicine, he says, is work. That his own industry is prodigious cannot be doubted. Physically he is gifted with seemingly tireless energy. He has that fortunate faculty or mental habit of thinking to useful purposes at all times. Dr. White plays his own part and is leaving his impress on the growth and development of the clinical medicine of the modern civilized world. He is, indeed, the typical modern physician of the Twentieth Century.

A great humanitarian as well as a great doctor, he does not believe that it is God's will that we should suffer from heart disease or any other kind of disease. In the case of heart disease, Dr. White feels certain that the fault lies within ourselves. We must practice discipline and force ourselves to recognize that the simple way of life — plain food, adequate exercise and a serene environment — are the best weapons that we now have against this dread killer.

Dr. White is not slow to note the progressive change in the world of medicine. He takes a deep interest in the theories of medicine and maintains his philosophy that the research laboratory holds the key to the mysteries of life. He does not rebel against the inevitable and is constantly encouraging the eager, questing medical researchers to continue with the adventure of scientific research. Indeed, he sees that the life of the world now demands sacrifice and that in the research laboratories of the universities, hospitals and medical centers, research and training for its own sake should take an equal place with the advancement of knowledge. Such policy is sowing for the future. Already it has borne a rich harvest.

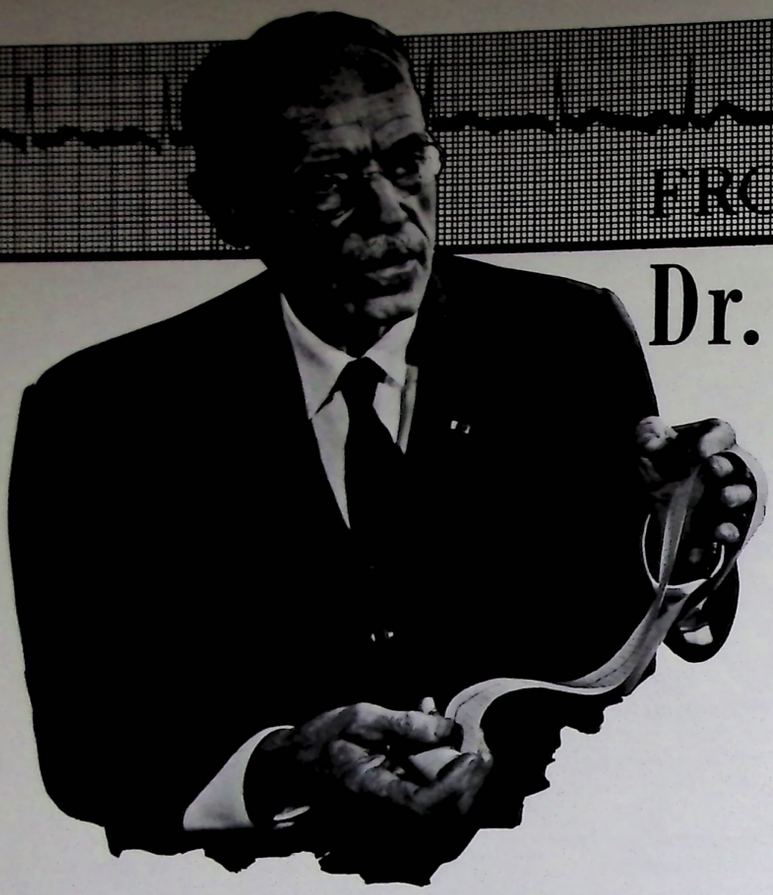
"One area needing much concentrated research in the future," Dr. White has said, "is the etiology and pathogenesis of congenital cardiovascular disease. Greater attention must also be given by internists and cardiologists to defects of the cerebral circulation which in the past have been left to neurologists and pathologists as if they were out of the range of cardiology and even of internal medicine.

"Finally, it is of the greatest importance for the advance of our knowledge of cardiovascular disease, as well as of that in other fields, that full support be given to investigators of the basic sciences of biophysics, biochemistry, physiology, pharmacology and genetics. We are, for example, in great need of increased knowledge in the field of heredity, where we are weak not only in our knowledge, but also in our routine clinical history taking as well as in application. It is undoubtedly true that the person — that is, the host — is just as important in the prevention, diagnosis and treatment of disease as is the environmental factor itself. We must know who the candidates are to whom our eventual protective programs should be especially applied.

"Thus, cardiology, like the rest of medicine, is on the high road to greater accomplishments. It appears certain that in another generation a doctor entering the field now will be able to look back with greater satisfaction over the next three or four decades than we can over the past. One of the most important and useful achievements in our struggle against heart disease will be our ability to give sound advice, based on proven facts, to the youth of tomorrow that will help them to avoid some of the ills that beset us today — in particular, serious degrees of coronary atherosclerosis and of hypertension."

Paul Dudley White, a great doctor and a wise man in his generation, has opened a new world of medical wisdom, the world of the human heart as it may be broadly comprehended in the language of everyday experience. As his name continues to tower most impressively in the world of medicine, honors continue to come to him from virtually every civilized country. However, they do not impair his childlike humility. His faith in God is absolute. ♦

"Doctors have no axe to grind," says Dr. White. "We talk as fellow men." At the invitation of the Ministry of Health of the U. S. S. R., Dr. White and 4 other medical specialists visited Russia in the fall of 1956 to confer with Russian physicians on medical rehabilitation and cardiovascular research (right). The American doctors found that the problems faced by Russian physicians are similar to medical problems in the United States and that the Soviet scientists welcome cooperative research programs.



FROM THE WISDOM OF
Dr. Paul Dudley White

This is the most exciting time in all history – the history of the world – and certainly it is the most exciting time in medical history. I feel very grateful for having been born when I was and to have seen the change that has come in one generation from the dark ages of medicine to certainly the dawn of the golden age. We are well into it, I am sure, but there is much more to come and there are many problems that lie ahead.

I like the quotation: "Men's lives are chains of chances." You can seize them or not, as you may wish, but with a father full of curiosity, I have accepted many of the chances that have come my way and have yet to regret such acceptance.

A physician, no matter how old, constantly acquires new knowledge from the experience of others, as well as from his own.

It is my experience and hence my belief that hard work, physical or mental, never killed a healthy man. Nor emotional stress either, with the rarest of possible exceptions. Practically all the cases that I have heard about, who have died under emotional stress (except in the case of suicides) have adequate underlying physical causes, with irritability of heart or brain induced as a final event.

We know a thousand times more about diseases than our predecessors did generations ago, but apparently infinitely less about health.

Our average longevity has greatly increased, so that now the average American baby at birth can expect to live seventy years or more – the girl babies four or five years longer than the boy babies. Nevertheless, they have all gone up to seventy or more. That means that there are many more old people who have to consider what they are good for, but my belief is that the maintenance of the regular habits of exercise – routinely in one's work or just added to one's work, if it is mental work – can be a very important safeguard for the future.

The greatest challenge of public health today is keeping the middle-aged physically fit.

It is a challenge and a privilege to live in these exciting times of world history, the most interesting, I am sure, since the dawn of mankind.

America is physically unfit as a nation and heart disease is definitely on the increase.

I have long advocated moderate exercise as one of the best ways to keep the heart in good condition.

We must give first priority to research in preventive medicine. Once the stepchild of medical teaching and practice, it is at last coming into its own and millions of dollars are now being allocated from public and from private funds the world around to seek and identify the causes of diseases still unknown. Once we recognize and understand the causative factors of unsolved diseases like coronary and cerebral atherosclerosis, their prevention – or at least their partial control – should be possible. The more trained research workers we put on the job now, the sooner we shall have the answers, which may come in time to save the lives and health, the happiness and the usefulness of many of those who read these lines.

In this push-button age, man is overeating and pampering himself and "the life of Riley" often leads us into a lot of early coronary disease, high blood pressure and diabetes.

I think that people are beginning to realize, in general, that they have gone too far in omitting exercise. It was common for our ancestors – just one or two generations back – to take a lot of exercise routinely in their lives. They thought nothing of walking five or ten miles, or of cycling twenty-five or fifty miles, or of working hard on the farm all day, or of going into the woods and working for hours cutting down trees. That was more or less the routine life and all of a sudden, in one generation, has come this rather abrupt change. It may possibly be, and quite probably is, a factor in the induction earlier in life of some of the diseases that used to be thought likely to attack only old people.

I would like to emphasize the beneficial effect of work on body, mind and soul in any occupation in which it is possible for a cardiac patient to engage. Idleness breeds unhappiness and is actually bad for the health.

Overeating may play even more of a role in the destiny of the world than the under-nutrition of hundreds of millions of representatives of the "common man." As a result, the problem of overeating is far broader than that of the so-called starving millions, and is a vital challenge to all cardiologists everywhere.

Exercise is one of the best ways to counteract nervous tension and the best antidote is physical activity when one feels tired.

We have to regard age physiologically rather than chronologically. Some people are younger at sixty than others at forty – that is, the arteries may show wear and tear or changes in certain people who are relatively young, whereas an older person may have quite soft arteries – in fact, be in excellent health at sixty or seventy or eighty.

Just how much heredity actually counts in any given case remains for future researchers to discover, but that it plays a most significant role is a certainty.

We can take a leaf from some of the habits of our ancestors, who knew more about health than about disease. We know a lot about disease, but we do not seem to pay much attention to health.

I have a feeling that stress and strain have been here ever since the days of Adam and Eve, who certainly were under stress when they walked out of the Garden of Eden. Every generation has had stress and strain since then.

Our medical ancestors were obliged to exercise much more than is the custom of most inhabitants of the so-called more civilized countries of today. Prosperity has brought with it great neglect of this health measure and in one generation there has been a very striking decrease in the use of our muscles. Although we have no adequate proof yet that such neglect is very harmful and although it is doubtless possible to live long and exercise little, there is a difference between a state of positive health favored by exercise and that of a soft physical condition, even in the absence of disease. Exercise has physiological benefits and improves the circulation; in fact, it acts as an accessory pumping mechanism to help the heart. Good muscle tone in the extremities compresses the veins, which with well-acting valves, help to return blood to the heart. Free motion of the diaphragm favored by vigorous exercise helps not only to bring air into the lungs but, through its negative pressure as a pump, helps to bring blood up from the lower part of the body back to the heart.

It is quite obvious from our experience of late years that neither sudden death, nor angina pectoris, nor coronary thrombosis, comes suddenly to a healthy man. The evolution of the process is a slow one, taking years at least and perhaps decades before symptoms or signs develop.

Activity, both physical and mental, within reason, is important for health at any age and I think it is actually helpful for longevity. Many retire long before they should.

Many of my contemporaries still play tennis – generally at doubles, but sometimes singles – rather easily, but sometimes quite a hard game and if they are in good health, there is no reason why they should not play into their seventies or even longer.

Walking, taking a good stride and swinging your arms at your sides, is excellent exercise.

Wherever there is prosperity, unusual prosperity in any country or any part of any country, we find that there is more atherosclerosis, rusting of the arteries, which involves not only the coronaries that supply the heart muscle, but the brain, too – the arteries going to the brain. And wherever there is this prosperity there are several factors involved, one of which – and the most prominent right away – is that of diet, enrichment of the diet, especially high in fat content.

It has been clinically evident that heart disease due to serious coronary atherosclerosis does "run in families" and that there are other inherited characteristics such as a high serum cholesterol, mesomorphic body build, diabetes and atherosclerosis in other arterial systems. The mechanism by which this inheritance occurs is still a mystery.

It is true that those who smoke most heavily are more likely to live shorter lives and also to have trouble with their hearts.

The over-protective mother instinct probably contributes to heart disease. Women feed their men too much for one thing, then are hurt if their men do not overeat. They go out of their way to make a man relax and rest instead of using his muscles.

I would like to put everybody on bicycles, not once in a while, but regularly as a routine. That is a good way to prevent heart disease.

Only during the last generation or a little more have we been able to turn from a spirit and life of fatalism and pessimism to the optimism that abounds in medicine today. This change has come largely through a change in environment. Man has made crooked things straight and has cured defects surgically within the heart and blood vessels. Man has used potent medicines effectively and now we believe that he may, through other alterations of the environment, succeed in protecting the young candidates of the future against these serious diseases of today, especially so far as the heart and blood vessels are concerned, namely hypertension and coronary heart disease.

The more well trained research workers we can put into all the important disease categories, the sooner shall we triumph over the terrible scourges of today – in particular, diseases of the heart and circulation, mental afflictions and cancer.

A hundred years ago "old age" began in the forties, fifty years ago in the fifties and recently in the late sixties. There is every reason to expect that it will reach the upper seventies or even the eighties within another generation.

Scientific medicine began several centuries before Christ, when such pioneers as Hippocrates directed the attention of their contemporaries and descendants to the scientific aspects of health and disease, which had hitherto been under the control of the priests of primitive religions, of soothsayers and of magicians. These beginnings of scientific medicine, at least so far as we have records of them, were located in the Near East, particularly in Asia Minor, Mesopotamia and Egypt. It is quite possible that it will be discovered in the course of current and future archeologic excavations, in Asia Minor particularly, that the Hittites may have developed more knowledge of disease than we are aware of.

Meanwhile, through those centuries and for a millennium after Christ, there was relatively little advance in medical knowledge. What was known was, however, widely distributed through the Mediterranean world by whatever ruling power was in control at the time. After Egypt, the Minoans and then the Phoenicians spread their civilization throughout the Mediterranean area before the Greeks and Romans came into power. All this was important in the development of the first medical school, which can actually be labeled as such, founded at Salerno about the year 1000 A.D., when a Greek, a Roman, a Jew and an Arab established the first medical faculty. The emphasis at Salerno was on health rather than on disease. This was what one might have expected in view of the very small amount of information then extant concerning the various diseases themselves.

Unfortunately, it is true that despite tremendous advances in our knowledge of diseases in every civilized country today, we seem to have fallen behind our remote ancestors in the pursuit of positive health. We can still take a leaf from the rules of health collected and presented at Salerno in the Eleventh and Twelfth Centuries.

Exercise is important, not just physiologically and perhaps as a retarding factor in the development of the rusting of the arteries, but as an antidote for nervous tension. Many people do not realize that.

Without a doubt, as recognized by our forefathers, the psyche has a very important influence on the soma, just as I am sure the soma has on the psyche, but we are barely at the threshold of knowing how and why. In some way, I believe, the bad effects of the alarm reaction, of grief, of fear, of anger, and of pessimism, can be neutralized and even superseded by inculcation of the positive virtues of courage, patience and optimism. Although many individuals are born with these traits, others must acquire them.

The easiest exercise of all, requiring no equipment except shoe leather, is walking.

Those with very high blood pressure certainly need treatment for it in order to cut down the wear and tear on the arteries and there seems little doubt but that the higher the pressure, the more likely the arteries are to be involved in atherosclerosis.

Improvement of health in middle age and old age in this country today is greatly needed and must begin with well-established habits in youth.

It would appear from my personal experience in population studies during the last few years that, given the hereditary candidate or host for the disease, the diet, in particular the fat in the diet, is probably of considerable importance.

I do not know whether some people have ever had the remarkably pleasant experience of relaxing fatigue after hard exercise, which I think is a very important benefit for one's health. And it is time that we recognize the usefulness of that relationship to exercise – not just the exercise for exercise's sake, but the beneficial effects that may come, especially to a mental worker. I think that probably those who are constantly intent mentally need more physical relaxation of that sort than those who have a certain amount of walking to do in their routine work.

FROM THE WISDOM OF Dr. Paul Dudley White

I am optimistic about the future control of coronary heart disease, at least in youth and middle age, if our current research develops adequately.

Physical activity, whether in the form of work or exercise, is very beneficial. It certainly is so for the physiology of the circulation and for the digestion and for the nerves. To get physically tired is the best antidote I know for nervous tension.

In every study of coronary-artery disease in youth and middle age, the male sex is represented in high preponderance – for example, in the ratio of twenty-four or more to one under the age of forty years, though with much lowered ratio in the next two or three decades. The sex factor is much more significant than heredity.

The twenty-year period from twenty to forty I call the critical years. It is in this period of life, when all seems to be going well, that atherosclerosis gets going even while the candidates for trouble look so healthy, in fact too healthy, robust, with high color and symptomless. These are the critical years for countless numbers of men in whom this process of atherosclerosis begins to be laid down. The average man in America settles down at about twenty-five to a life of physical indolence, although often with great nervous activity in his profession or business. He has no more time to exercise or to have relaxing recreation of any sort. He has an automobile and can hardly move without it. He has a television set, before which he lolls in the evening on return from his office. And his wife cooks too well. He puts on a pound or two or three of weight every year during this period; that extra weight is not muscle. When I see him as a patient at the age of forty-five to fifty, he is twenty to thirty pounds heavier than he was at twenty-five. I always inquire now of my patients with coronary heart disease at the average age of fifty what their weight was at twenty-five. It is almost invariably true that much weight has been added slowly through the years, though sometimes rapidly during the earlier years soon after marriage.

The next age of man is from forty to sixty, which is the middle period of middle life, where much of the disease that has been slowly building up becomes apparent by symptoms, signs, or sudden death. Hypertension, coronary atherosclerosis of high degree giving rise to angina pectoris, sudden death, or heart attacks with myocardial infarction, little strokes and big ones too, abnormalities of the circulation to the legs and cancer are the chief threats through this period of twenty years. Here is the ripening of the hazard that started in the twenties or thirties. It is quite certain that the health in this period in middle age from forty to sixty is largely dependent on what has happened before, much less in childhood – that is, before twenty – than in the period from twenty to forty. It is quite obvious that we must start a campaign for "middle-aged fitness."

The old age period is from eighty to one hundred, which can be much healthier if we can forestall some of the progressive changes in the intima of the coronary and other vital arteries earlier in life and if we can avoid hypertension and some of the other ills – including cancer, of course – that strike middle-aged people. In addition to the prolongation of life we have the problem of maintaining health, that is, of adding life to years as well as years to life. It is in general true that the longer we can keep people living, the more useful they can be. It is absurd to require retirement in the sixties. Most people, especially in the future, will still be very useful in the seventies and well enough to carry on quite vigorously, both mentally and physically. There is no reason why a man of seventy to eighty should not continue to shovel snow if he is well, perhaps at not quite so fast a tempo. We might aim for one hundred per cent mortality from coronary atherosclerosis if it kills quickly at the age of one hundred during the night while the victim is asleep, without any illness or incapacity prior to that time. This would mean the cancellation of the serious infections, of cancer, of accidents, of war and many other ills. It will be a fine and perchance a final goal.

It is quite obvious that we are in the midst of the evolution of much important research and that no hard and fast statement can yet be made about diet. All we can advise at present is to avoid both obesity and an over-rich fat diet – probably a fat content not exceeding twenty-five to thirty per cent of the total calories is quite reasonable. This, too, may be partly dependent on the amount of regular and vigorous exercise.

Shock, stress or occupation do not by themselves cause disease in a healthy heart, but may cause serious effects for persons with heart trouble.

I myself have found that exercise in moderation is one of the best ways to treat many of my convalescent cardiac patients. The establishment of a good program of regular exercise, I find, is often more important than many medicines.

Coronary heart disease may reveal its presence in several ways. There is coronary thrombosis – the familiar "heart attack" which is a common, but not the only kind, of heart attack. There is angina pectoris, a particular kind of discomfort in the chest, not consisting of sharp pain and caused by inadequate blood supply to the heart. There is a rare type of fainting due to the blocking of the electrical impulse through the heart. We can now diagnose coronary heart disease infinitely more easily than we did a generation ago, partly because we have it on our minds and ask the right questions and partly because we have better technical methods for its detection. A generation ago, coronary thrombosis was regarded with great apprehension. Once the diagnosis had been made, it was thought that death was imminent and unpredictable and that three years of life was the most one might expect. But then, some of us who began to specialize early in the study and practice of cardiology watched many of our coronary cases recover and not only live for years, but carry on active lives, if their heart scars were not very large and if they were free of symptoms.

Exercise is important for everybody, whether they have been sick or not. Of course, a person in an acute illness, whether it is from heart disease or pneumonia or any other kind of disease, has got to be at rest to be treated for that immediate illness. But, after recovery, graded exercise can favor the progress of convalescence and rehabilitation.

Sons often inherit hypertension from their fathers and daughters from their mothers; when both parents are affected, there is more hypertension in both sons and daughters. High blood pressure is three times more frequent in the siblings of hypertensive persons than in those of persons with normal blood pressure.

Physical strain includes much of the life work of many millions of persons in the world today, but it has yet to be proved that, barring rare exceptions of extremely strenuous labor and accidents on the job, work per se ever physically hurt a healthy man, woman, or child. Unhappily, industry and other physical occupations have been blamed (for lack of a suitable substitute for such blame in our way of life today) as the cause of many of the ills, even including coronary atherosclerosis, which in all probability are in no way associated with such physical activity. This is a serious error still currently practiced today and for the sake of the future of this country, it urgently demands correction.

As a person gets much older and retires, he is much less active and is under much less strain, physical and emotional.

Too little is known accurately about the effect of tobacco and alcohol in the production of the atherosclerotic process, but there seems to be little or no likelihood that these are involved in the underlying process. However, given severe atherosclerotic changes with coronary insufficiency or an important degree of hypertension, tobacco and even on occasion the overuse of alcohol, can be very harmful because of the aggravation of the disease process.

Persons with much muscle should exercise more vigorously than others. They should start at a young age and continue throughout life. Former President Eisenhower is predominantly a muscular type and he has always exercised. If he had not, his heart attack might well have come sooner and been more severe. He was allowed to stay on the job, as long as he continued to get enough sensible exercise and to keep his weight down.

I warn my heart patients under fifty that their children are likely to be candidates for the disease. It surely runs in families and we should be protecting, first of all, those who are most likely to get it. Everyone, especially this broad, muscular type I talk about, should be examined early in life to start a personal medical history. Protecting health before disease comes, instead of concentrating entirely on treatment, is the physician's task.

At the present time, the American male expects to live only to sixty-seven years or a bit more and the female to seventy-three. This difference of six years has increased in the last generation, largely due to the earlier hazards in middle age, chiefly atherosclerosis, which affects the male, so far as the coronary arteries are concerned, twenty-four times more often than the female under the age of forty, about five times more in the forties and about twice more in the fifties. We must make every effort to change the present inequality of these ages and the great surplus of widows over widowers in the middle of the later period of middle age, from sixty to eighty.

Stress and strain, whether physical or emotional, can precipitate trouble.

From the early days of the recognition of rheumatic fever and of rheumatic valvular heart disease, it was observed that these conditions tend to run in families. A generation ago, several studies were carried out in an effort to obtain some statistical information about the frequency of familial involvement. We ourselves found that from thirty-two to fifty per cent at least of patients with rheumatic fever, chorea, or rheumatic heart disease, have near relatives with a history of similar trouble.

Recreation should be more clearly recognized as having not so much the same meaning as the justifiably popular expression, rehabilitation (medical, surgical and psychological), but rather the connotation of its function for the maintenance instead of the restoration of good health. Recreation can be physical, mental, spiritual, or indeed all three combined and the more the better for the rounding out of character and personality.

Studies of sudden deaths have shown that they were always superimposed on an important degree of disease.

The candidates for early coronary heart disease are more likely to be among the muscular, broad people we call mesomorphs. That was found out in a study of individuals with coronary thrombosis, under the age of forty. Such a person is more likely to be an athlete and therefore that person, in the first place, is more likely to get coronary thrombosis than his skinny contemporary, like myself. It is quite possible that at the age of twenty-five, when he quits all exercise and begins to put on a pound or two of weight during the next twenty-five years, he is doing himself harm which might not take place if he had continued his hard exercise and had not put on any weight.

Coronary-artery disease is four times more frequent among the children of affected parents than among the children of parents not so affected.

We should try to correct the erroneous opinions and practices of countless individuals in this country who are still inclined to blame hard work as the primary cause of atherosclerosis and its complications. Just one word about hard work: it is true that one can get very tired both physically and mentally from hard work, but I have yet to find a man or woman, otherwise healthy, who has, from hard work alone, become ill—provided he or she carried out a sensible program of life.

A positive program for cardiovascular health is essentially the same as that for physical fitness in general. It is not simply protection against cardiovascular disease. It undoubtedly protects against other disease conditions, too. Ills of the mind and nervous system can be caused and also aggravated by lack of such fitness.

We are beginning to recognize somewhat the candidates for coronary thrombosis early in life, by that I mean in the thirties and forties and it can come even in the twenties. We have found that family history counts here; so does body build, so does the amount of fat in the blood—the serum cholesterol—up to a certain point. A wide range of normal but very high levels of serum cholesterol in the blood probably mean that that particular individual is a candidate. This can be found out long before there is the actual threat of coronary thrombosis.

I do not think it is necessary to undertake vigorous exercise every day. A couple of times a week or even once a week would be enough. Even the weekend exerciser may be all right, may be helping himself. If he exercises only once a year, that is another thing. Once a week may be enough if it is good, vigorous exercise. If one wanted to have a perfect plan, one might recommend an hour of exercise a day.

Atherosclerosis of serious degree, involving the blood supply to several important organs and body areas, is the most common, almost universal, threat to life and health in the United States today. It is the same disease of the walls of the various arteries supplying blood to the heart muscle, the brain, the kidneys and other viscera, and the legs, responsible at present for over half the deaths in the United States each year.

In the case of coronary heart disease, one of the environmental factors or agents that has been not too difficult to measure and which varies greatly in different parts of the world and in different portions of the same population living in the same place or far apart, is diet. The details of the diet have been and are now, quite rightly, the focus of increasingly intense research, even though it is recognized that other factors, such as the degree of physical activity, emotional stress and strain, toxic substances, climate and especially heredity, also need careful evaluation. If other factors are by nature or by intent essentially constant, it is reasonable to attempt to relate disease, or the extent thereof, to pronounced variations in the diet.

A very important reason why heart disease is diagnosed more often today is that a good many cases were almost certainly mistaken years ago for something else, such as the debility of old age or "acute indigestion," or not discovered at all—or if discovered away from medical centers, were not recorded. It is important to remember that the first adequate description of coronary thrombosis was not published until 1912 and it was not even then widely recognized for still another decade.

One of the most common symptoms of heart disease, known as "angina pectoris," occurs when the blood supply to the heart is insufficient. This condition usually produces an oppressive pain under the breast bone—not over the heart, but in the center of the chest. The tightness or pressure experienced with a heart attack is not always severe enough to be called painful by some patients. Heart pain will sometimes radiate from the mid-line of the chest into the shoulder and down the inside of the left arm. Many victims of heart disease have complained of an uncomfortable and abnormal shortness of breath. Swelling of the feet and ankles can be another late sign of heart weakness, but is usually of other origin—for example, varicose veins or great obesity. The nervous heart, fast-beating heart and heart consciousness are quite common and rarely indicate heart disease. Of course, they disturb some people, but some people are disturbed by ordinary breathing—once they stop and listen to themselves breathe.

Serious hypertension, including the malignant degree, does run in some families, the younger members of which should be investigated, followed carefully and protected, so far as we now know how to do, before their blood pressure reaches high levels.

Many physicians believe that other measures besides the use of anti-coagulants can be very helpful in the future protection of persons who have suffered an acute attack of coronary thrombosis. These measures include: reducing weight if the person has been obese; eating a diet at least somewhat limited in fat, especially animal fat; following a program of regular exercise suited to the individual and of other relaxing measures and avoiding unnecessary strains and worries, including worry about the heart trouble itself.

Evidence of the most important cardiovascular disease—coronary and cerebral atherosclerosis—often appears in middle age, but the actual disease starts earlier. It is undoubtedly due to slow accumulation of the atherosclerosis and other factors that probably begin in the twenties. Sudden death, heart attacks and little strokes do not appear out of the blue at forty, forty-five, or fifty. They have been building up for a good many years and simply come to light at these older ages. Since it is often difficult to know the degree of atherosclerosis before symptoms appear or before signs that we can as yet identify, prevention should be our chief aim. We do not have all the information we need about preventive measures, but we are sure that we do have some clues. One of these is the maintenance of physical fitness, including the avoidance of obesity and the establishment of regular habits of exercise.

It has been the experience of people through the ages and of many of us today that stress and strain are universal and probably have existed in high degree all through history. This generation has no monopoly on stress and strain. Every generation has complained of its emotional difficulties and it is not just a matter of the speed of modern life. There was probably more stress felt by some person in the Middle Ages running to escape some dire fate than we ourselves may encounter sitting comfortably in an airplane traveling four hundred miles an hour.

FROM THE WISDOM OF Dr. Paul Dudley White

Exercise sufficient to cause muscular fatigue is the best antidote I know for nervous strain and insomnia. It can helpfully replace most of the tranquilizers and sedatives of today.

In order to establish good habits which are protective throughout life, we must train the young, no older than their teens and also vigorously through their twenties, to establish a program of positive health measures. It is during the period of the middle twenties that the good habits of youth fitness are so often abandoned and the bad habits of physical indolence and over-nutrition of adult life become established. We must not only teach our youth to keep themselves fit physically as well as mentally and spiritually; we must also strongly point out to them the need to maintain their physical fitness, which includes cardiovascular fitness, throughout all their lives.

Families should begin to record again for permanent preservation their family trees, with ages at death and causes of death of all their members and, for the sake of the protection of the health and the prolongation of the life of their descendants, to request that post-mortem examination be made at the time of death for vital information. Also, all practicing physicians should record the ages, dead or alive, the causes of death and the state of health of the parents, grandparents and siblings of their patients.

One of the most significant findings in a recent study was the apparent protection afforded by the continuation of a program of heavy exercise. It happened that no individual in this study who had maintained a program of heavy exercise had as yet developed evidence of coronary heart disease.

As in the case of physical stress and strain I do not believe that mental stress and strain hurts a healthy man, woman, or child, provided it is not extraordinarily severe or prolonged and provided occasional respites for relaxation are offered, preferably both by physical exercise of almost any sort and by some interesting avocation. This was our program for former President Eisenhower. It is the neglect of useful measures of that type and overindulgence in other practices that are doubtless the cause of the nervous prostrations, the high blood pressures and the coronary thromboses that are currently blamed upon the stress and strain of the job, no matter what it is, with possible rare exceptions.

I feel certain that the establishment of cycling as a routine in the daily life of Americans, young and old, can become one of the most vital steps in restoring health and vigor to us all in the important days ahead.

Our goal is that of preventive medicine. Why increase hospitals and beds solely for the purpose of taking care of diseases that we think can be prevented? Many of us now have accepted the challenge. We think that sudden death is not God's will; it is something that is wrong with our own way of life. We are not finding out rapidly enough why people die suddenly. They usually die suddenly of coronary heart disease, but that should not occur in youth and middle age, or even in old age, perhaps, any more than in the old days when infantile dysentery and typhoid fever, hydatid cysts, rheumatic fever and syphilis were rampant and killed innumerable people. Those diseases are now preventable and we have very much less of them.

One is never too old to exercise.

Studies initiated by Ancel Keys, in some of which I myself have participated, have shown that in different parts of the world, particularly in Italy, South Africa, Japan, Sweden, Finland and the United States, those populations exposed to a rich, fat diet appear to be afflicted by much more coronary heart disease than populations not so exposed.

To exercise is perfectly normal and improves one's health, but I am quite sure that people vary very much in their need of exercise. It is quite possible that some people may go through life with very little exercise and still be healthy, but nature intended the muscles to be used and such use does improve the circulation and the digestion and the mental state and quite possibly may help to prevent certain ills or reduce the tendency to them.

It is not God's will that we should suffer from heart or any other disease: it is our own fault.

The medical profession's function should be just as much that of maintaining health and of preventing disease as of diagnosing and treating it. We doctors, however, have been so busy with disease that we have neglected health – that is, a program of positive health, including our own.

One does not die from "old age" alone.

There is a difference between cardiovascular unfitness and cardiovascular disease. Simply the absence of disease is not enough. What we should aim for in our programs is positive health. There is a wide range between cardiovascular fitness and cardiovascular disease–in this range lies unfitness.

Throughout the animal and insect world, the female outlives the male. Even with our advancing life span, the sexes are gradually moving farther apart. Not long ago, there was only three years difference. Now it is about six years–sixty-seven for men and seventy-three for women. Under forty years of age, twenty-four times as many men as women have coronary heart attacks. From the ages of forty to fifty, coronary heart disease affects five times as many men as women. In the fifties, it is two to one. In the sixties, it evens out, but a good many men have already died off.

You can be fat and live long, but the majority of fat people do not live so long. There are exceptions. The life insurance statistics have proved the harmfulness of obesity.

What would I recommend to the average man to ward off heart disease? I think he ought to start in the early twenties and not gain a pound after he is twenty-five, or even twenty-four or twenty-three, especially if he comes of a family that has had a similar trouble. Also, he should maintain vigorous physical exercise all through life, especially if he is very muscular. We were born to use our muscles and we know there is a beneficial effect not only on the circulation but on the digestion and the nerves. The peripatetic philosophers, or rather the Stoic philosophers, used to walk along the stoa when they philosophized. I think they realized that with good use of their leg muscles, they had better circulation in the brain.

It has been said, and perhaps rightly, that a five-mile walk will do more good to an unhappy businessman than all the philosophy and medicine in the world and I rather think it is true. You may want to experiment some day. Our ancestors thought nothing of walking five or ten miles, but today very few people walk more than a mile. I find it very hard to get anybody to walk even half a mile with me, nowadays.

It seems very probable that in the present almost frantic search – which, I might add, is highly important and should go on – to establish a safe program of life for the protection of our citizens from the present devastating epidemic of coronary thrombosis, we should not expect to find one program equally suited to all. It is a very complicated business, for we are dealing with the intricacies of diet, of stress and strain, of physical and mental effort, of climate and of personal habits, in addition to all manner of humankind – but the main point I want to make is that we must recognize our duty in the study of the host as well as in that of the agent (or environment), just as we would do in any infectious epidemic. Doubtless, there are general measures of positive health that are good for everyone and certain dangers that are bad and should be avoided and these are at least in part already evident, but the details of both host and agent are still to be added. We can supply, much more than we are doing now, the important ancestral and immediate family history in every case and this is bound to be helpful at the very start.

One of the best antidotes for mental stress and emotional fatigue is physical fatigue from exercise. Much of the tranquilizing now going on in this country today would be unnecessary if people could get physically tired and again sleep as they did in childhood, after a strenuous game. Of this I am sure, from my own experience and that of many of my friends and patients.

When I was a medical student finishing my course of studies to receive my medical degree in 1911, I never heard about this disease, coronary thrombosis, which is the chief hazard to life in this country today – an astounding development in one's own lifetime. Nor are we even now aware, I am sure, of some of the ills which will be identified tomorrow or the next day, but we have certainly made much progress in this aspect of disease.

We should have information about family health for the sake of the youth of the country, for the men – aged thirty to fifty, who are likely to have coronary thrombosis suddenly out of a clear sky, never having been sick before. Women do not get the disease until they reach the menopause. We shall be able to pick many of those candidates out, if we have a good family history in each case and if we observe the body build. It is the mesomorph, so-called, the broad, muscular man who has been putting on a pound or two a year for twenty years, who is the candidate at forty-five or fifty, especially if he has a high serum cholesterol. That is the person for whom protection is going to be needed in the future; not a person like myself who certainly has escaped coronary thrombosis in youth – probably because of a good family history so far as longevity is concerned, and body build and quite likely vigorous physical activity. Certainly, hard work has not killed me yet – and I do not expect it to do so soon.

Sex plays a major role as a basic factor, not only in coronary heart disease in younger individuals, but also in the severity of hypertension in middle age. The male sex has the higher degree of involvement in both cases.

Exercise should be taken enjoyably.

There are many health reasons why cycling, like a good many other exercises, is to be highly recommended if it can be done safely. In the first place, it is an aid to good muscle tone, much needed by the American people today. It aids the circulation and thereby the heart and its work by keeping the blood actively moving in the legs (muscular contraction squeezes the veins which, with their valves direct the blood back toward the heart); the lungs which, through good tone of the diaphragm, make it easier to bring oxygen into the body and pump out carbon dioxide; the brain, by keeping down the cobwebs therein: the nerves, through improving sleep and maintaining equanimity and sanity (vital needs in this country today and a help in combating the hysteria about a red Indian behind every tree or a witch in every college classroom, along with the current ridiculous slavery of our people, men, women and children, to the television and other push-button devices, which should be our tools and not our masters); our digestion, whereby it may even protect against peptic ulcers if we do not try to establish new speed records every day; our weight, in its control, if we at the same time keep the caloric and fat content of our diet where they belong – and finally, our longevity, since it may quite possibly help in the long run (like other healthy exercise) in reducing the amount of high blood pressure, coronary thrombosis and diabetes which have engulfed us; this we must, of course, determine by further detailed research, but there is a strong likelihood that this is true.

It is almost certain that our forebears practiced far better than we various rules of health that tend to delay or to prevent the so-called degenerative diseases of middle age, though vast numbers did succumb at early ages to the infections which we can now prevent.

We know that obesity is harmful, but you can get obesity in various ways, though chiefly via calories. There is a growing concern about the way we get our obesity, or the way we get our nutrition, without even being obese. Are fats, for example, necessarily harmful? Probably not to everyone, but there are certain candidates who perhaps should not have certain fats. Are all fats harmful? We do not know yet. The present thought is that animal fats are more hazardous and the nonhydrogenated fats are less dangerous and that perhaps the liquid fats which are more of the vegetable type are the least dangerous. There is a hope that corn oil and olive oil may eventually, for certain candidates, be able to replace such fats as butter and cream and eggs.

There are innumerable methods of exercise and I think generally the exercises that are more interesting are better, because the interest induces one to keep them up.

We must use common sense and try to strike a balance between oversolicitude about our health – decried over two millennia ago by the Greek philosophers – and our almost total neglect today, as indicated by the general disregard even for their own health by the medical profession in this country at present.

Most Americans take a holiday from physical fitness between the ages of eighteen and thirty – and pay for it the rest of their lives. Lack of exercise, overeating and other harmful health habits acquired during this period must either be broken off painfully or may lead to serious illness.

Like other children, I had a bicycle as a boy and used it in play and in going to school and doing errands. In those days, there were relatively few automobiles in the streets and this method of locomotion was relatively safe. As a freshman going to college, I used to ride my bicycle morning and afternoon to Cambridge, from where I lived in Roxbury and back again – a five mile distance twice a day, which was perfectly easy and practical. In later years with my wife, I took many bicycle trips in Europe, where there had already been developed much better facilities for the use of the bicycle. This is especially true in Holland, where we spent a week cycling around the country on paths both broad and narrow, reserved entirely for cyclists. It was a delightful experience and a pleasant and inexpensive way to see the country. We cycled also in Sweden, in England and in France. Finally, in our personal experience, our family continues to ride bicycles, although more, of course, in the country.

We have become soft and careless in acquiring many of the ills of mankind, except for infections, upon which we have concentrated largely to the exclusion of other disease prevention, but once we have acquired these ills we are prone to yield to them and to live lives of apprehension and invalidism.

There is no reason why we should be unhealthy simply because we are prosperous. We have become one of the unhealthiest countries in the world with respect to atherosclerosis. It is almost as bad as under-nutrition and starvation, but it is the other extreme. In other words, one type of malnutrition is over-nutrition and we are just beginning to recognize that.

We know now that one does not die of old age. I myself have always found some adequate cause.

Not only is physical work not responsible for most ills, but it is probably one of the most potent health habits which we should make full use of, perhaps most of all at older ages, when too many hundreds of thousands of persons are retired to sit in armchairs and to drowse in front of television screens day after day, and even year after year, both to the detriment of their own health and to that of society, which could with more wise planning utilize their experience and their accumulated wisdom, often for a good many years more, though perhaps at a decreasing tempo. I dare say that the one most important measure to improve and to maintain the health and happiness of our older citizens is to keep them working both mentally and physically; this would make unnecessary at least half of all the measures, medicinal, social, economic and educational, that are now laboriously being introduced as geriatric devices.

I am convinced that leisurely walking or leisurely exercise otherwise may be very good treatment for hypertension, rather than the reverse that we have tended to do.

Physical exercise is just as essential to good health as rest and sleep, work and recreation, food and peace of mind. Soft, unused muscles do not do as good a job and make clotting in the veins more likely. Thrombosis in the leg veins can have serious consequences. Physical exercise tones the muscles, improves circulation of blood in the veins; it is good for the diaphragm and thus makes it easier to bring oxygen into the body and pump carbon dioxide out. Exercise actually improves digestion. The benefits of exercise to the nervous system are probably the most important of all. An intense mental worker needs exercise to clear his mind. A good long walk in the evening is often more hypnotic before retiring than medicine, reading, or a highball.

Today, with the great extension of life, including not only the average expectation, which is about seventy instead of thirty as in Shakespeare's time and forty a hundred years ago, we know that many healthy people are active in the sixties, seventies and eighties.

Walking up and down stairs is good exercise, but it certainly is dull.

If a person is in good health he can re-train himself at any age – slowly, gradually getting back into condition. It is a matter of conditioning.

FROM THE WISDOM OF Dr. Paul Dudley White

Our main objective is to help Americans get back on their feet again. This can be done in many ways: by persuading more and more to engage in various sports and, perhaps, the simplest exercises – walking and cycling.

Along with the natural protection of her sex, a woman burns up more calories in a day at home than her husband does, even if he works in fairly heavy industry. If the average man could do as much physical work in a day as his wife, he would be a healthier person and he would live longer.

Generally speaking, the broad, muscular type of individual is more susceptible in his youth to a certain kind of heart disease, that is, coronary heart disease. This is especially true if there is a history of coronary thrombosis in the family. He is a marked man. I look at these young men as I walk down the street and want to ask them if they are getting enough exercise and watching their diet. The muscular or mesomorphic individual tends to have a more energetic, impatient personality, at times pushing himself and others too hard. But the drive that produces stress and strain is not necessarily the cause of heart disease. The individual who has this drive is likely to do everything to excess – eat more, sleep less, smoke more, work harder (though not perhaps physically).

Most people who have been sick, no matter what their sickness has been – an infection or a so-called chronic disease – are helped by exercise.

We think smoking has an irritative influence on the stomach, lungs and blood vessels, but it probably does not actually produce many diseases, except for lung cancer, which is a real threat to those who smoke excessively for many years. When people stop smoking, however, they invariably feel better within a few months. Tobacco is a liability to the best of health.

So far as obesity is concerned, we all know that life insurance and other mortality statistics do definitely point to the decreased longevity and more common illnesses in persons with considerable overweight, but the details of the diet, not the calories per se, are now being more extensively studied in researches on man himself. The first findings have indicated in several parts of the world – in countries where different races or different groups of the same race ingest quite different amounts of fat in their diet – that those who are lowest in the economic scale eat the least fat, have the lowest content of cholesterol in their blood serum and suffer the least from coronary thrombosis.

In this push-button age man is overeating and pampering himself. "The life of Riley" leads to a lot of early coronary disease, high blood pressure and diabetes.

Respiration, the function of the lungs and digestion – that of the gastrointestinal tract – are importantly affected by the condition of the heart and blood vessels and by the various degrees of physical fitness per se, as is also the general musculature of the body. Thus, the importance of cardiovascular fitness is very great. Every organ in the body and even the skin and bones have their own blood supply brought by the blood vessels, which should therefore be maintained in as good condition as possible.

Most people who exercise hard are not fat. They are sensible about diet, too.

Exercise, without any doubt, has a favorable effect in most individuals as at least a partial antidote for nervous stress and strain. It so acts with me and many of my friends and patients. Former President Eisenhower himself obtains great benefit through the relaxation of nervous tension which comes with his exercise. Doubtless, the more highly muscled individuals need more exercise and when we think of the common practice of our ancestors only a generation or two ago – of walking long distances routinely, of helping to clear the forests and of vigorous hunting and fishing – we must admit that our present way of life is very different.

Within a decade, there should be a great improvement in the case of the worst hazards to health everywhere on earth.

The establishment of exercise as a routine in the daily life of Americans, young and old, can become one of the most vital steps in restoring health and vigor to us all.

Sudden death has been noted by various writers since ancient days. Pliny recounted many instances of the sort in the case of Romans early in the first century after Christ and Lancisi, in 1707, wrote of others. There does, however, seem to be a considerable increase, indeed in epidemic proportion and especially in young and middle-aged males, in the United States today. Every daily newspaper headlines them. In the majority of cases, they are the result of atherosclerotic disease of the coronary arteries, the increased prevalence of which appears to be in some way related to our modern way of life.

Many adults have told me that they are embarrassed in getting on bicycles today because it is supposed to be a child's game. This attitude or point of view, which is current and which does deter many persons, must be combated. It is quite unnecessary – witness the routine bicycling in the course of a normal way of life in the Old World.

The increased use of animal fats in the diet may spell the pattern of heart disease in some individuals. The result may be too much fat in the blood. It may be that it is not injurious to everyone, but the richer the fat in the diet, the higher the content of cholesterol. Cholesterol is the chemical substance that carries fat and is believed to clog the coronary arteries, reducing the flow of blood to the heart. This event causes a heart attack or coronary thrombosis. The average American eats fifty per cent of his calories in fat when it should not be over twenty-five per cent. Some could probably eat more, some less. The Japanese have ten to fifteen per cent fat in the diet and less than a fourth of our rate of death from coronary heart disease.

Today, diseases of the heart and circulation are responsible for one out of every two deaths after the age of forty-five, killing more people than the five other leading causes of death combined – cancer, accidents, kidney disease, pneumonia and tuberculosis. It is estimated that forty per cent of all men over the age of forty have some degree of obstruction of their coronary arteries and hence are candidates for coronary heart disease at almost any time. And heart disease is finding younger and younger victims – even twenty to twenty-five-year-olds have symptoms that result in heart attacks.

The people of the United States are today only too well aware that diseases of the heart and blood vessels are the chief cause of death in this country, attacking young as well as old and accounting for more than fifty per cent of all fatalities. Fortunately, during the last decade great and most encouraging advances have been made in the increase of our knowledge about heart disease, its various causes, its diagnosis and its treatment, both medical and surgical, probably more than in all the centuries before. These advances have been chiefly the result of well planned efforts to stimulate and to support research and the training of research workers through government funds and through voluntary contributions to the annual Heart Fund campaign.

Swimming is good exercise. There you use the whole body. But it is not always convenient. In the winter, if you live in the North, you have to go to a pool. But you can always walk. You can shovel snow in the winter and do other things in the summer.

An annual examination is sensible, because the doctor may pick up high blood pressure long before it causes any obvious trouble; he may pick up changes in the electrocardiogram in middle-aged men that are significant; he may find other things – heart murmurs that are present before symptoms come. Therefore, annual examinations are very helpful in picking out people who are already beyond the candidate stage and of course he should also pick out the candidates, or try to – and then apply what we believe wise now, even before we have all the answers, with respect to diet or other factors.

People have gotten into the lazy habit of jumping into their automobiles, even to go around the corner to get a package of cigarettes. They have lost all incentive for exercise, so that probably there must be a real effort by many people to resume exercise as a matter of habit.

A great change has taken place in the longevity of the inhabitants of the United States, almost wholly dependent on the control of the infectious diseases. Since high blood pressure and arteriosclerosis are much more common in older persons, it is natural to expect more heart disease now.

Top executives are smart enough to know they need escape valves to offset the stress and strain of their positions. Excessive work and worry can aggravate an existing heart condition, producing the symptoms of heart disease, but not necessarily the disease itself. Actual heart disease is usually already present before stress and strain take effect. For that matter, what is stress and strain for one person is not that for another. A certain amount of stress is probably good for everyone. The reason work is blamed is that other health measures are neglected under the excuse of the pressure of overwork, physical or mental. When a person has long hours of work, he can get tired mentally, but he continues to eat far too much and to avoid all exercise. Excessive stress is wrongly blamed for what is probably caused by neglect of these factors, namely diet, weight and exercise.

I think that if one would walk five to ten miles a day at a fair pace – swinging one's arms and taking some good, deep breaths – he would get good exercise out of it for the whole body.

Heredity is of great importance. We doctors have been aware of that for generations, but we really have not done much about it. In a vague way, we know about the families that tend to have high blood pressure, but we have not gone to town on it. And we do not have enough geneticists. We need to train more and more geneticists – experts in heredity. But in quite a simple way we doctors can get further ahead, right away, by taking more adequate family histories – that is, the details, so far as we can, of the illnesses and the causes of death and the ages at death of immediate ancestors and relatives, at least the father and mother, the siblings and the grandparents, if possible. One of the great difficulties is that the families themselves do not know enough about their family health. The patient often cannot tell us how old his mother's father lived to be, or what he died of.

We should heed the advice of our medical ancestors, who apparently knew more, or at least preached and practiced more than we, a program of positive health habits. The habit of adequate exercise, for example, is just as important, I believe, as one's sleep, one's work and one's food.

In the treatment of disease, the medical profession has made its greatest contribution during the last generation. When I contemplate our helplessness in the treatment of the majority of my medical patients, cardiovascular and otherwise, forty years ago, in comparison with what can be done today both medically and surgically, I can hardly believe what I have seen.

A physical examination usually does detect existing diseases. Every individual should have a physical examination at least once a year and more often if symptoms of importance show up. An electrocardiogram (EKG) will not foretell heart disease unless some damage has already occurred. An exercise test, well interpreted, is sometimes revealing. An EKG does not show the state of the arteries, but that of the heart muscles. If a clot is blocking the coronary circulation, the EKG will generally show it. An electrocardiogram showed former President Eisenhower's heart to be perfectly normal a month before his attack. An EKG is as individual as a fingerprint. It is wise for a young man, while still in good health, to have one taken for his health record. Then the doctor will have something to go on in the future, when he needs it for diagnosis. However, in the final analysis, an individual's medical history is more important than an EKG.

Taken by and large, the person who smokes a great deal and drinks and eats a great deal is the person who tends to be the mesomorph (person of stocky build), who does everything rather excessively, you might say, so that it may not be the tobacco and alcohol that causes his coronary disease, but the excessive eating that he does at the same time.

Good muscle tone in legs and arms and diaphragm without question aids the circulation and we can feel, as I have many times personally, the delightful relaxation that comes with muscular fatigue. Some claim that they can live long and healthy lives with very little or no exercise, but I believe there is a difference between positive health and simply the absence of disease. So strongly am I convinced of the value of exercise in proper amounts that I am making every effort to get the American young and middle-aged male back on his feet again. The women can profit by it, too.

Physical activity is just as necessary to life as food, air and water. People live by activity. The only time they do not need exercise is when they are dead. Physical activity helps keep your muscles in tone, as nature intended them to be. It aids respiration, digestion, blood circulation and the elimination of body wastes. It is a law of nature that your organs as well as muscles grow stronger with use, weaker with disuse.

It is extremely rare for a person with a healthy heart to suffer a sudden, fatal heart attack.

I might not be alive today myself if I had not exercised. If you are out of condition, you can start exercise gradually – just as we handle a patient recovering from a heart attack. His first move is to take a few steps around the room, then gradually work up to where he may be playing eighteen holes of golf again. But anyone who has exercised all his life can continue to exercise until he is one hundred – and he will more likely live to one hundred. You should not stop shoveling snow because someone died doing it. You might as well stop driving a car because someone has been killed doing it. For that matter, heart attacks rarely occur during strenuous exertion. Most come during rest or sleep.

Middle-aged fitness deserves the limelight now. We must not allow the new pressures of education of the mind to suppress the essential programs of the maintenance of physical fitness. There is no sense in highly educating the mind of a man who may be a brilliant contributor until his sudden death at thirty-eight or forty, or his crippling at some other age in middle life. It is not only uneconomical, but it is a grave mistake. Let us, therefore, while working for the fitness of our minds and souls, not neglect the fitness of our bodies.

Health must be conserved by the initiation of positive programs in the formative years, not later than the teens and especially through the twenties. "Train up a child in the way he should go: and when he is old he will not depart from it."

Many of us are optimistic, perhaps because we have watched the science of medicine evolve in our own lifetimes from the dark ages to the dawn of a golden era. We believe that someday we shall be able to protect the candidates for coronary heart disease from their fate, at least in early life and in middle age, by a program which we shall eventually discover. We are already able to begin to identify the candidates for early coronary heart disease. The chief clues now are: their family medical history – mainly the longevity, causes of death and illnesses of their parents and grandparents; their physical build – the so-called mesomorph, broad and muscular; their biochemical picture – for example, a very high blood content of cholesterol, a fatty substance, or too high a blood sugar – and their sex. The male in youth is many times more frequently affected than the female. But we are just at the beginning.

Women can keep their husbands alive longer, if they want to, by not treating them like hothouse orchids and by encouraging them to walk more and eat less.

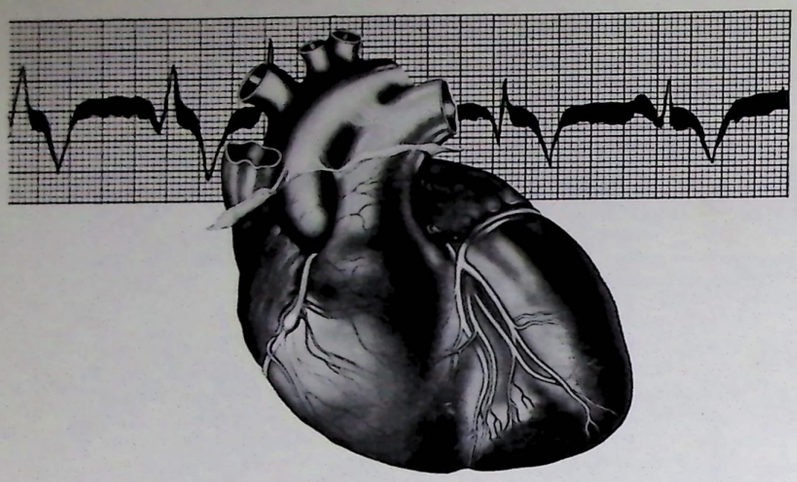
May I express optimism about the future results of our researches – physical, chemical, hereditary, pathologic and clinical – on atherosclerosis, especially of the premature varieties. Within another generation, in fact I believe within a decade, with the present increasing tempo of vigorous research, we should have some definitive answers that will allow us to protect our men and to increasingly extend the expectation of a long and healthy life.

Good health and a long life to you all!

Paul D. White

Dr. Paul Dudley White explains

CORONARY THROMBOSIS



Rehabilitation of many individuals who have been crippled in the past by coronary heart disease has become a proven fact, but it needs still to be applied to uncounted thousands of persons not only with coronary heart disease but with other types of heart disease and other diseases, too. Such rehabilitation may be through nature herself, now recognized to be able often to do a good job, or by medical or surgical measures already mentioned.
—DR. WHITE

THE phenomenon of the sudden death of apparently healthy human beings has been one of the great mysteries of the ages. For thousands of years such a dramatic event was considered an act of the gods, especially of Zeus or Jove, Wotan or Jehovah. Even as recently as the winter of 1705 to 1706, the occurrence of an unusual number of sudden deaths among prominent persons in Rome was ascribed by many to God's displeasure with the city. Pope Clement XI and his remarkably able physician, Lancisi, challenged this belief and by repeated post-mortem examinations proved during the following winter that every sudden death could be explained by natural causes. In fact the first and, so far as I know, the only scientific book on sudden death, was Lancisi's *De Subitaneis Mortibus,* published in Rome in 1707 and dedicated to the Pope.

The first clue to what has now come to be recognized as the leading cause of sudden death had appeared in print even before Lancisi's book. In 1700 Theophile Bonet, a leader of French medicine, published in the second edition of his *Sepulchretum* the case of a fat poet who died within a few minutes after showing symptoms of trouble in his chest. A post-mortem examination disclosed a very marked narrowing of his coronary arteries, the vessels that supply the heart muscle with blood. The bore of the vessels had narrowed to such a degree that not even the point of a needle could be inserted in them, whereas normally the main coronary arteries can admit a good-sized knitting needle.

This narrowing or partial occlusion of the coronary arteries is of fundamental importance in the causation of thrombosis, that is, of a blood-clot formation in a vessel. Indeed, thrombosis is merely one of the complications of coronary artery disease and more persons die suddenly of the disease itself without thrombosis than of an actual thrombosis. Hence a brief review of our current knowledge of coronary artery disease is a necessary background for understanding that great hazard of middle age: coronary thrombosis.

The coronary arteries bring oxygen and nutriment to the most important muscle in the body, the heart muscle or myocardium. The heart, a powerful and remarkably efficient muscle, contracts an average of seventy-two times a minute, day and night, and in the average human adult pumps four thousand gallons of blood in twenty-four hours. For this, it requires an especially efficient blood supply. The blood is brought to the heart muscle through two coronary arteries, which come off the main arterial trunk, the aorta. The left artery quickly subdivides into two main trunks, each as large as the right coronary trunk. These three trunks course in grooves over the outside of the heart. They give off many branches and these in turn send twigs down into all parts of the heart muscle. The branches and twigs are connected by many minute blood vessels, forming a vast network which plays an important role in maintaining an adequate coronary circulation in later life.

Two other observations may be added about the coronary arteries. First, they are more subject to change in position than other arteries of the body and the constant kinking and stretching of the elastic tissue and muscle in their walls may be an important factor of wear and tear. Second, they are supplied with nerves and very probably are subject to narrowing and widening through nervous influences, though not very much is actually known about this in the human heart as yet.

Now, let us consider disease of the coronary arteries. Such lesions may or may not have serious consequences; that is, they do not necessarily result in actual heart disease and even if they do, it may be reversible. Although there are several different kinds of coronary artery disease, one is responsible for at least ninety-nine per cent of all cases. That kind is what we used to call "arteriosclerosis," but now prefer to call "atherosclerosis," because the latter designation indicates the evolution of the process. "Atheroma" (from the Greek word for pudding) means a soft swelling. Atherosclerosis begins with a soft swelling of the inner lining of the artery and proceeds in the course of months or years to hardening or sclerosis. The soft swelling consists essentially of the deposition of globules of the fatty substance, cholesterol, just under the thin layer of cells forming the inner surface of the blood vessels. This is followed by a reaction which forms fibrous tissue in masses and layers in the artery wall. Small cholesterol fat particles, or small collections of this fatty infiltration, can be disposed of by being transported through the wall to the *vasa vasorum,* the little blood vessels in the outer part of the walls. But larger collections of larger droplets accumulating rapidly cannot be so readily absorbed. They develop into masses of fatty crystals and globules that finally change to calcified plaques with accompanying fibrous scars. These bulge into the arterial passages and cause varying degrees of obstruction to the flow of blood.

This process doubtless takes years to develop serious consequences. Important lesions of this nature may begin, say, at thirty, but not become manifest by symptoms or signs until the age of fifty. From my own observations, the average age at which coronary heart disease first shows itself is about fifty-two. It is always in a diseased, badly narrowed, atherosclerotic coronary artery that a thrombus, or clot, rather suddenly forms one day to present the clinical picture which we call "coronary thrombosis."

Three other observations should be made about coronary atherosclerosis. In the first place, the process involves one particular spot more often than any other. This spot is located on the anterior descending trunk of the left coronary artery about half an inch below the point where it branches off. Secondly, and of the utmost importance, there is the fortunate, life-saving fact that as the obstruction of the coronary blood supply due to atherosclerosis slowly evolves, a collateral circulation develops to compensate for this. As a result of the constantly increasing head of pressure of obstructed blood, hammering away day and night, the tiny junctional vessels between the coronary arterial trunks become enlarged to permit blood to pass more freely. Thirdly, this compensatory development may entirely prevent injury to the heart muscle, even though there is extensive atherosclerosis.

Every person who lives long enough develops at least a little coronary

artery atherosclerosis. But why some individuals acquire such a high degree of it in youth or middle age that their hearts are seriously affected remains a mystery. The fact that the disease cripples or kills so many of our leading citizens at the height of their careers has at last in recent years prompted the medical profession to challenge the spirit of fatalism that long prevailed about these "acts of God." Important researches—clinical, biochemical, metabolic and anthropological—have been started on this problem. We have learned something about the cause of extensive coronary atherosclerosis, but we have barely scratched the surface. This disease, more common than cancer, is the most serious in the United States today. It needs intensive research.

One thing we do know about coronary heart disease is that it is much more common in men than in women in youth and middle age. In two different series of one hundred cases each of persons under forty with this disease, we found the ratios of males to females respectively ninety-six to four and ninety-seven to three. An anthropological study of the second series showed that the majority were of the mesomorphic (thick and muscular) build. These young coronary patients, as a rule, had a higher cholesterol content in the blood and a lower basal metabolic rate than controls of the same age. This is probably due to some unknown metabolic or endocrine factor.

One symptom and only one is thoroughly characteristic of coronary heart disease. This symptom is the condition known as "angina pectoris," which literally means a strangling in the chest. The oppression is generally located under the breastbone and it often radiates into an arm, usually the left. Induced chiefly by effort, the anginal pain ordinarily lasts only a minute or two; it may be relieved by rest or by the administration of nitroglycerin. The discomfort is explained as an ache in the heart muscle caused by its working too hard for the amount of its blood supply; a similar ache can be induced in the muscles of the forearm by repeated bending of the wrist when a tourniquet around the upper arm cuts off their blood supply.

An electrocardiogram may also yield evidence of coronary heart disease, but sometimes the electrocardiogram may be normal except during an attack of angina pectoris. In doubtful cases, a physician may deliberately induce angina by exercise in order to look for changes in the heart's electrical record. Such tests are rarely needed, however, if the patient tells his story well or his history reveals old trouble.

How does a restriction of the coronary circulation itself bring on sudden death? I have already mentioned that deaths from coronary disease actually occur more often without thrombosis than with it. In a series of two thousand thirty cases of sudden and unexpected death, reported by the Chief Medical Examiner of New York City, the most common cause of death (thirty per cent of the cases) was coronary atherosclerosis of high degree. Almost three quarters of these showed no thrombosis.

There is evidence that the mechanism that produces death in the latter cases is often the fatal disorder of the heart rhythm, called "ventricular fibrillation." Normally the ventricles, the major pumping chambers of the heart, beat regularly in rhythmic response to the stimulus from the heart's pacemaker: the sino-auricular node, situated in the right auricle. If the muscle of either ventricle is irritated by nervous stimulation or some local fault, an extra heartbeat may be set off by the irritated spot. This premature beat or extrasystole is by itself of no importance; it is a common occurrence even in an otherwise normal heart. But if the ventricular muscle is exceptionally irritable, an irritation may induce paroxysmal racing of the heart and when there are many irritable or otherwise abnormal foci in the ventricular muscle, the heart may try to beat in a very incoordinated way from numerous points simultaneously. The result is a sudden complete failure of the heart to act as a pump; instead, it becomes a squirming mass of muscle and death comes quickly. Very rarely can the human heart recover from ventricular fibrillation, either spontaneously or as the result of treatment with electrical shocks designed to restore its rhythm.

Coronary thrombosis, though well publicized as the prime malady of the middle-aged American business and professional man of today, is but an incident, though a very important one, in the evolution of the process of coronary heart disease. The stage is all set before the thrombus is laid down in the diseased artery.

Just how the blood is triggered to clot is not yet fully clear. Most often, perhaps, a thrombus begins to form on a roughened bit of the inner lining of the artery, or at a very much narrowed place in the vessel. Within minutes or hours, the thrombus grows large enough to block the blood flow and to cause the various symptoms and signs that follow. This basic mechanism may sometimes be supplemented by others: a calcified plaque or a small clot attached to the artery wall may break off and pass along the blood stream to block a narrow place further on; clots may form from a hemorrhage of the small blood vessels in the outer part of the diseased artery wall; a "cholesterol abscess" may rupture. Some persons may have a tendency to thrombosis because their blood clots at an abnormally rapid rate.

An attack of acute coronary thrombosis usually develops as a sudden severe illness, with pain which is exactly like angina pectoris but persists for hours and is not relieved by nitroglycerin. As a rule it is so severe that it is necessary to administer an opiate. Death may come—in minutes, hours or days—through a variety of immediate causes: a state of collapse, vascular shock, ventricular fibrillation or, uncommonly, the choking of the heart's action by blood pouring into the sac about the heart from the ruptured heart wall. In about eighty per cent of all cases, however, the patient survives the immediate attack and the heart usually heals to allow life for at least some years.

As a rule the attack leaves a permanent scar in the heart muscle. Aside from the temporary irritation and shock caused by the lack of oxygen and accumulation of waste products, the blocking of the coronary blood stream damages the tissue. Heart muscle, like any other tissue in the body, dies when deprived of its blood supply, and the portion of the myocardium that is cut off from its normal blood supply by the plugging of the thrombosed artery becomes an "infarct"—a term applied to tissue anywhere in the body that dies and is replaced by a scar when its circulation is cut off. Fortunately, we have more muscle in our hearts than we need for ordinary activity and so we can get along with an acute infarct or an old scar in the heart, or indeed three or four old scars, if they are not very large. Myocardial infarcts may range in size from that of a small marble to that of half a tennis ball and in shape from a thin, flat area to a thick mass, like a truncated cone or pyramid. Naturally the smaller the infarct the better for the patient, but he may survive a very large one; he may even live comfortably for years with a rather badly scarred heart.

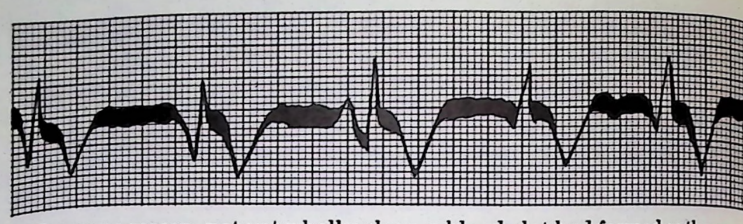
It is encouraging to bear in mind also that the blocking of a coronary artery by a thrombus does not always necessarily damage the heart. If, as often happens, the interconnecting channels in the coronary arterial system have developed an adequate collateral circulation to compensate for the atherosclerotic obstruction, the blood flow can bypass the obstructed artery to nourish the threatened heart muscle. Patient waiting and common-sense measures over the period of disability may be rewarded by the slow development of an adequate collateral blood supply.

What are the measures of treatment? When first formed, the acute myocardial infarct, acting like an abscess though it is actually sterile, gives rise to a low-grade fever for a few days and an increase of white blood cells. It also produces a rise of the blood-sedimentation rate and certain abnormalities of the electrocardiogram. In a week or so, the dead muscle cells are cleared away and a scar begins to form in their place. Complete rest is necessary for about three or four weeks in order to prevent a blowout through the temporarily weakened heart wall or an unnecessary degree of dilatation of the heart, with permanent enlargement. When the scar is well set, the patient can usually start a program of gradually increasing activity, and within three or four months many patients can resume their usual occupations. During the several weeks of the acute illness, nursing care is of chief importance. Two medicines have proved useful: quinidine sulfate, which helps to prevent ventricular fibrillation, and dicumarol, the anti-coagulant or anti-clotting agent, which reduces the danger of the blocking of circulation by emboli, or traveling clots. Such clots may form in the leg veins and travel to the lungs, or form in the left heart chambers, particularly over the region of the infarct itself, and migrate to the peripheral arteries. Sometimes circumstances may also demand other measures of treatment: for example, oxygen for certain acute emergencies and digitalis if the heart muscle fails. But it is nature that heals the infarct, as it heals a broken bone or develops the collateral coronary circulation.

Coronary heart disease, with its company of angina pectoris, acute coronary thrombosis and myocardial infarction, may continue to kill and to cripple for generations to come. Actually, it is not an altogether unmitigated evil: if it ended our lives only when we reached an advanced age, we should not object to the quick and merciful death of heart disease for all men. What we do need to do, however, is to study intensively the disease as it affects men and women in youth and middle age, in order to apply effective measures of prevention, if we can. Here is an outstanding challenge to the medical profession and indeed to all others, to aid us in this important task. ♦

Dr. Paul Dudley White explains

the A-B-C's *of* HEART ATTACK



MR. BROWN, a business executive in the middle fifties, had eaten an unusually hearty dinner after a long, hard day at his office and had retired early, feeling tired but otherwise well. Sometime shortly after midnight he was awakened by a sensation of heavy pressure under the breastbone. It persisted and grew more and more severe, although Mr. Brown took baking soda and drank hot water. He felt faint and broke out in a cold sweat. Unable to endure the pain, he agreed to have his wife call the doctor, who arrived at one o'clock in the morning. By that time he was in agony and the doctor gave him two hypodermic injections of morphine, about twenty minutes apart, before he felt any relief.

He dozed fitfully through the night and the pain continued in gradually lessening degree until about noon the next day. After that he was exhausted and a little feverish in the evening (100 degrees Fahrenheit by mouth). The day after that he felt much better, despite a higher temperature (101 degrees). The fever lasted altogether four days, but he had no more pain at all. Within a week of the onset of the pain he felt perfectly well, but the doctor wisely insisted that he remain, with head elevated, at complete rest in bed (although he could be lifted at times into a chair) for another two or three weeks in order to ensure an adequate healing of the injury in his heart.

Not having been confined to bed by illness for many years, he rebelled at first, but when the doctor explained what was going on in his heart he acquiesced. For the first two weeks he was on the "danger list" (a wise routine measure) and lay very still, except for some gentle foot exercises to ward off "phlebitis" in his legs (a clotting of the blood in the veins), but during the remaining time in bed he was allowed more activity. He fed himself and had visitors and even two or three brief business conferences, since no complications had arisen.

If Mr. Brown had a fairly large area of heart muscle damaged (infarcted) and was cared for in a hospital with adequate laboratory facilities, he was given one of the relatively new anti-coagulant drugs to help prevent the formation of thrombi (blood clots) in heart or blood vessels which can result sometimes in serious complications. Also, he received quinidine sulphate several times a day for a fortnight to try to prevent any troublesome arrhythmia (variation from normal rhythm) of the heart.

After three or four weeks, Mr. Brown no longer had to be helped into a chair. For a week he gradually increased the time he spent sitting up each day. The second week he walked about a little more each day on one floor. The third week out of bed he began going up and down stairs once each day and during the fourth week he went out for a short daily walk or drive.

Thus, there passed tediously but uneventfully two months of convalescence and it was not too difficult then to induce, or rather advise, Mr. Brown to take one more month, his third, to complete his rehabilitation away from home, getting mild exercise and restoring his morale, which had at first been badly shattered by this unexpected disaster. He resumed his work slowly but within a month was back in the swing of it again, though avoiding long hours and the more severe strains, both physical and mental. He also ate lightly, lost some excess weight, and wisely did not resume the tobacco which he omitted the very first day of his illness. A year later he was in excellent health, free of all symptoms.

Although the clinical diagnosis of Mr. Brown's illness was clear, several electrocardiograms which were made over the course of his convalescence, beginning with one twelve hours after the onset of the pain, were corroborative of injury to a portion of the wall of the heart.

Now, what happened to Mr. Brown's heart? His coronary arteries had in the course of years become sclerosed (hardened) and narrowed, but not to the point of causing heart-muscle ache on the occasion of his mild, daily routine effort; he had long ago given up sports and any more exercise than walking a block or two at a time.

For some reason, not yet wholly clear, a blood clot had formed rather abruptly that night in a roughened, narrowed part of a branch of the left coronary artery. The clot blocked the blood supply to an important part of the heart muscle, which began to ache. The ache did not subside, for the heart muscle continued to be deprived of its blood supply while carrying on its regular contractions. For hours the disabled piece of muscle, perhaps the size of a walnut, continued to struggle along in its work with the rest of the heart, but as more and more of the muscle fibers became swollen and defunct they ceased to contract and the pain slowly subsided.

By the time the pain had gone away there had developed in the heart a considerable bruise and it was the reaction to this injured muscle, acting like a sterile abscess, that caused the fever. Toward the end of that first week and in the early days of the second, the heart wall at the point of injury was at its weakest; during that time there was a real danger of rupture, with hemorrhage into the pericardial sac and death. Hence the need of complete rest during those critical days when on the surface all seemed to be going so well.

During the second week of the illness the process of repair begins, with the appearance of "fibroblasts," or building cells, and of new little blood vessels (capillaries), but there is no strength to the scar until the end of the third week. By the end of the fourth week the scar has begun to contract and during the second month it becomes solid, so that with an injury of small to moderate size it is safe to resume ordinary living during the third month.

An important though secondary reparative process that takes place during those early months is doubtless the development of a more adequate collateral circulation. Just as a bone fracture heals with care and time, so, if all goes well, with ordinary luck and care three months is sufficient to place in the category of past history this episode of myocardial infarction caused by sudden closure of a coronary artery by a blood clot. But in a few cases complications may delay healing and prolong the convalescence, sometimes to an exasperating degree.

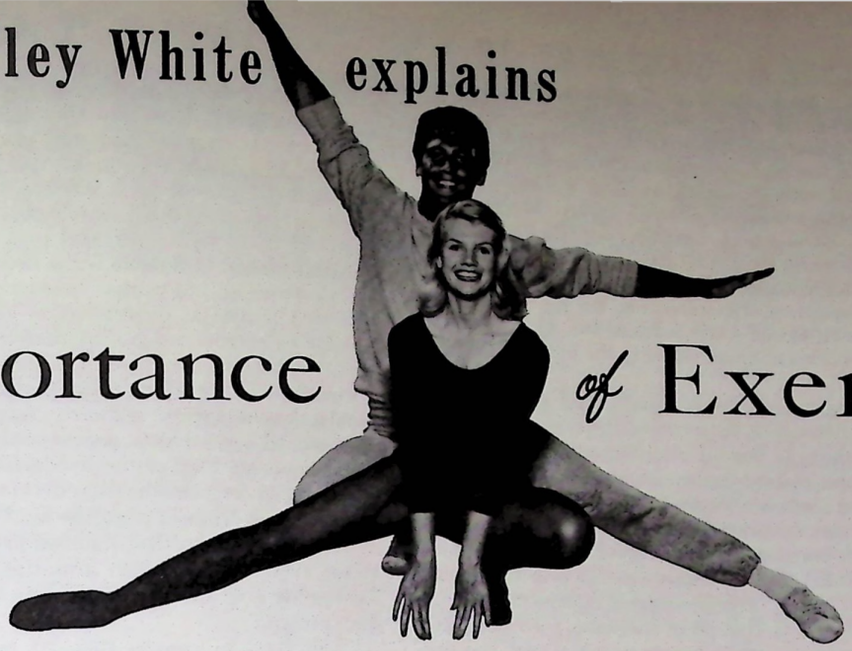
In the absence of angina pectoris, or much cardiac enlargement, either of which may follow cardiac infarction, the future life of the individual needs to be but little restricted, in fact not much more than after the healing of a broken leg. Common-sense measures are all that are required; there is no need of medicine except for special symptoms or complications, although it has been found helpful in a good many cases to give anti-coagulants and quinidine during the first weeks of the acute illness while the patient is at rest in a hospital.

Life may continue uneventfully for many years after myocardial infarction and death may ensue five, ten, fifteen, twenty, or even twenty-five or thirty years later of some cause other than heart disease. Only in the minority of cases is the attack itself fatal, usually within the first few hours or days. In another small group, disabling complications such as congestive heart failure may develop to limit life and activity.

Cardiac infarction may recur in another part of the heart in some cases after some months or years, to leave further scars which may or may not be well borne. Or angina pectoris may develop as a complication, or continue, or even disappear if it was present prior to the coronary thrombosis. Thus, many courses are possible and it is hazardous to prophesy in any case.

Planning for the future should be postponed until after the first few weeks. It is usually unnecessary to retire. Many persons do quite well, much better, in fact, than was thought possible twenty-five years ago when the condition began first to be widely recognized and distinguished from "acute indigestion," with which it had for so long been confused. ♦

Dr. Paul Dudley White explains *the* Importance *of* Exercise



PHYSICAL fitness includes many aspects of health, one of which is the protection of the human body from the infections that have beset us in the past and that still threaten us. Here we can be somewhat content with the progress we have made in preventive medicine. Not only the athletes of today, but all of us, feel reasonably confident that our careers in youth and middle age will not be interrupted by the epidemic diseases of the past, such as plague, cholera, diphtheria, meningitis, or pneumonia. On the other hand, we are threatened with the diseases that seem to come with prosperity, which manifests itself in a soft way of life. As a result, we have over-nutrition, high blood pressure and today's popular disease of the arteries—namely, atherosclerosis.

Insurance and vital health statistics have demonstrated clearly the shortening of life, and also the hazard in other respects, in at least ninety-five per cent of persons afflicted by obesity. The cause is too many calories, whether they come from carbohydrate, protein, or fat. As a rule, the combination of surpluses of all three is responsible. It is, however, beginning to be indicated by current researches that the fat in the diet—especially if copious in amount and of animal origin—may be more hazardous than equal caloric contents of carbohydrate or protein.

Obviously then, physical fitness is injured by overweight and enhanced by normal weight. As a matter of fact, it is better to be what some persons consider too thin than to have any extra pounds. It isn't just the extra pounds under the skin that count; much of the fat goes elsewhere than subcutaneously, including the inner lining or intima of the important arteries of the body. This includes the coronary arteries that supply the heart muscle with blood; the carotid, vertebral and basilar arteries that supply the brain; the renal arteries that supply the kidneys; the abdominal arteries that supply other viscera and the aorta and iliac arteries that supply the circulation to the legs.

Perhaps not so important, but nevertheless of great significance in physical fitness, is a regular habit of vigorous exercise. Physiologically, it has been well demonstrated during the last generation or more that physical activity with vigorous use of the muscles is advantageous to health. Very few middle-aged people in this country today are getting enough exercise. It looks as if we've gotten into lazy ways with all our push-button devices and automobiles, so that generally the middle-aged American male today is soft. That may well be a factor in the production of some of his diseases.

Some people are beginning to realize, in general, that they've gone too far in omitting exercise. It was common for our ancestors—just one or two generations back—to take a lot of exercise routinely in their lives. They thought nothing of walking five or ten miles, or of cycling twenty-five or fifty miles, or of working hard on the farm all day, or of going into the woods and working for hours cutting down trees.

Of course, another thing has happened, too, which is very important to remember and that is that our average longevity has greatly increased, so that now the average American baby at birth can expect to live seventy years or more—the girl babies four or five years longer than the boy babies. Nevertheless, they've all gone up to seventy or more. That means that there are many more old people who have to consider what they're good for, but my belief is that the maintenance of the regular habits of exercise—routinely in one's work or just added to one's work, if it's mental work—can be a very important safeguard for the future. If a person is in good health he can re-train himself at any age—slowly, gradually getting back into condition. It's a matter of conditioning.

I think that we can take a leaf from some of the habits of our ancestors who knew more about health than about disease. We know a lot about disease but we don't seem to pay much attention to health. This is true of the doctors, too. They have gotten so much new knowledge about all kinds of diseases and such remarkable treatment for these diseases that now prevention of disease—except for the infections—has been rather neglected.

Exercise is important for everybody, whether they've been sick or not. Of course, a person in an acute illness, whether it's from heart disease or pneumonia or any other kind of disease, has got to be at rest to be treated for that immediate disease. But, after recovery, graded exercise can favor the progress of convalescence and rehabilitation.

By many physicians, especially by those of us who are interested in physiology and health as well as in disease, physical exercise is considered to be just as essential for the best health as are rest and sleep, food, one's job, recreation and peace of mind. Sometimes, however, one hears remarks, usually made by those habituated to a very sedentary life and to more or less obesity, that one can live quite happily and healthily to a ripe old age without taking any exercise at all. It is true that adequate statistics on this point about exercise seem to be lacking, although life insurance and other figures clearly indicate the harmful effect of obesity both on health and longevity. Some fat people do exercise a lot but most do not and it is unusual for an athlete who continues to exercise vigorously to become very fat.

I doubt if some people have ever had the remarkably pleasant experience of relaxing fatigue after hard exercise, which I think is a very important benefit for one's health. It's time that we recognize the usefulness of that relationship to exercise—not just the exercise for exercise's sake, but the beneficial effects that may come especially to a mental worker. Probably those who are constantly intent mentally need more physical relaxation of that sort than those who have a certain amount of walking to do in their routine work.

There are the immediate physical effects of exercise on the circulation of blood. Good muscle tone in the arms and particularly in the legs, resulting from regular exercise, maintains an improved circulation of blood in the veins. Actually, since the veins have valves, which when in good condition prevent the blood from going the wrong way, the compression of the veins by the skeletal muscles helps to pump the blood back to the heart, thus decreasing stasis (a slackening of the blood flow).

Good muscle tone, especially of the legs, improves greatly the return of blood from the dependent portions of the body to the heart, thus supplementing the work of the heart itself. The veins of the extremities have important valves to send the blood in the right direction. These valves were demonstrated as long ago as 1603 by Fabrizio d'Acquapendente and the knowledge of their function established the conclusive proof by William Harvey of the circulation of the blood,

presented in his memorable book, *De Motu Cordis*, in 1628. There is thus great importance in having good muscle tone in the legs which have some of the largest muscles of the body and where the effect of gravity tends to hinder the flow of blood back to the chest and head.

Soft, unused muscles do not accomplish as good a job, and make clotting (thrombosis) in the veins more likely also, as when one sits for a long time in an airplane, or after an operation or any illness which keeps a person in bed or inactive for a long time. It is best on long trips by plane or train or automobile to get up or out and walk a bit at intervals to combat this tendency. Thrombosis in the leg veins can on occasion have serious consequences when some of the clot (embolus) breaks off and blocks an important blood vessel in the lung (pulmonary embolism).

An interesting experience suffered by an aged friend and patient of mine, then 103 years old, illustrates the value of the exercise of simple walking in controlling a stasis in the leg circulation. He had had the grippe in mid-winter and was housed for two or three months. While he sat about waiting for spring, both legs began to swell with no symptoms of pain anywhere or of breathlessness. When I saw him in the early spring he was discouraged, bored and apprehensive about the dropsy. Examination, however, showed that his heart was not responsible, nor any actual thrombosis, but simply a very sluggish circulation and the effect of gravity in an aged person. Instead of medicine, the resumption of his regular exercise of walking, up to a mile or two a day, was prescribed and within a week or ten days the leg swelling disappeared. Now, three years later, he continues to be in excellent health.

In addition to its beneficial effect on skeletal muscle tone, exercise also improves the tone of the diaphragm, which results in its better function as the piston of a pump, not only to bring a full supply of oxygen to the lungs with removal of carbon dioxide, but also to suction blood into the heart via both inferior and superior venae cavae (great veins). Vigorous exercise is best for this, but if an individual is unable to undertake such activity, deep breathing exercises several times a day are of definite value. Of course, it is always wise also to avoid restriction of the motion of the diapraghm by excessive abdominal fat.

Another part of the circulatory apparatus helped by exercise is that of the smallest blood vessels, arterioles, capillaries and venules, which are rendered more active in their function by their response to regular exercise. The peripheral vessels of the hands, the feet and the ears react beneficially with less likelihood of sluggishness and stasis.

Thus it is evident that although the heart is, of course, the main agent in maintaining the circulation of blood, the aid it receives from these other structures is considerable and may indeed on occasion mean the difference between good health and physical unfitness. The course of human existence does not always run smoothly. Not infrequently in the lives of all of us emergencies arise which demand a fully efficient circulation with reserves, not just a sluggish one that is adequate for a sedentary life only. An accident or an illness or operation may test to the full the resources of the body and it is probable that the difference between a state of positive health and a state of mere existence—although not diseased—may mean the difference between life and death.

Digestion—when meals follow exercise and do not just precede it—and bowel function are improved by exercise. Not infrequently vigorous sport renders laxative medicine quite unnecessary. Sleep is favored, too; in fact, a brisk long walk in the evening may be more helpful as a hypnotic than any medicine, highball or television show.

Vigorous exercise helps prevent obesity, although diet is of primary importance in this respect. Unfortunately, the amount of physical exercise either in work or in sports carried out by the average man or woman in the more prosperous countries in the world today has reached a low minimum. We are slaves to labor-saving devices such as automotive equipment and to television. Despite the obvious usefulness, indeed the necessity, of the moderate use of the push button to our living today, we must be wise enough to be their masters and not their slaves.

It happens that along with the current lack of exercise and the enrichment of the diet and over-nutrition of today, there has occurred in countries of greater prosperity an alarming amount of serious high blood pressure and coronary heart disease. The relationship between lack of muscular exercise and overeating on the one hand and the diseases just mentioned on the other, needs extensive and intensive investigation which is being initiated by a few pioneers.

Most important of all, there is the beneficial effect of exercise on the nervous system and the psyche. Here is the reverse of the effect of mind over matter or psyche over soma. The importance of somatopsychic physiology and medicine has not been adequately appreciated. It has been said that a five-mile walk will do more good to an unhappy but otherwise healthy adult than all the medicine and psychology in the world. Certainly, it is true that in my own case nervous stress and strain can be counteracted and even prevented by regular vigorous exercise; it is the best antidote that I know. It matters little, if at all, what kind of exercise it is, provided it suits the strength and liking of the individual concerned. It is well to establish a regular habit and to maintain it through thick and thin. One should regard it as just as essential to good health as eating, sleeping and working.

An intense mental worker needs exercise to keep his mind clear and it is well if mental concentration can be alternated frequently with exercise or even accompanied thereby, as was the common custom of the peripatetic philosophers in Athens in the days of its prime.

Finally, it is my strong belief that all healthy persons, both male and female, should exercise regularly, no matter what their ages. Of course, in advanced age—that is, past seventy—it is doubtless wise to exercise less strenuously than earlier in life, but no strict rules can be set. Every person must be considered individually according to his condition, habits and preferences as to the kind of exercise and the circumstances of his life. Some healthy, vigorous persons in "good training" can play tennis, even singles, in their seventies and golf in their eighties. John D. Rockefeller and Adelbert Ames were golfers together when both were in their nineties.

Other types of exercise that can be recommended for healthy older persons are long walks, swimming, fishing, skiing, moderate hunting, bicycling, snow-shoveling, gardening, woodcutting, horseshoe pitching, less strenuous gymnastics and curling. Milder games may suit some individuals, such as croquet, shuffleboard, bowling on the green and archery. Stair climbing, though a dull exercise, and calisthenics are not infrequently of some use, too. Doubtless, persons with much muscle, especially men, can and should exercise more vigorously than those with less; in fact, to maintain the best of health this may be necessary.

In the case of persons who have an important but not crippling disease, cardiac or otherwise, mild exercise may still be advisable for the sake of the maintenance of health, but each one must be carefully considered individually by his or her physician and so advised. Instead of forbidding exercise like golf in the case of a person who has had coronary thrombosis—whether or not it has left a scar—but who is free of symptoms, the establishment of a habit of regular exercise is usually an important part of the treatment. Of course, in the presence of symptoms of importance the exercise should be limited, but even in such cases some sort of exercise is usually advisable, even if only short walks or light gardening, or deep breathing.

Of course, it is not sensible for a person, even if very muscular, suddenly to take on some unusually strenuous exercise without working up to it gradually. It is always wise to get into a condition of so-called "training" gradually. But it is time for us at all ages to be more than spectators of the sports of the day. We should expand our physical activity beyond that of getting into and out of automobiles and riding in elevators, buses, trains and planes. A return to the use of our legs is to be highly recommended.

In contrast to the intense interest justly deserved in promoting both the fitness of children and youth of today and the health of aged people, there has been a sad neglect of the long period of middle age, which may be said to extend from the early twenties, when full growth is achieved, up to the beginning of old age in the early seventies. It has become the custom for young people to adopt all the labor-saving devices, to stop taking any adequate physical exercise and to eat so richly that they gain a pound or two a year for several decades. This is in contrast to the current customs of the populations in less privileged countries and to those of the ancestors, sometimes the immediate ancestors, of these very individuals who have adopted a soft way of life. This new way of life should be investigated more thoroughly as to its effect in the promotion of heart and blood vessel disease, as well as to its possible effect on the mental and spiritual health of all the world. The greatest challenge of public and of private health today, and the most neglected, is that of physical fitness in middle age. It transcends, I believe, the problems of health of both youth and senility. The laudable goal of improving the physical (and mental) health of our youth should have no age limit at any decade, but it ought to continue on where it is most needed all through life. The problem of our aged will thereby be greatly lightened. It is not God's will that we should suffer from atherosclerosis, or any other diseases for that matter, in youth or middle age; it is our own fault. As Shakespeare said, "Our remedies oft in ourselves do lie, which we ascribe to Heaven." ♦

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But to desire wisdom and not know how to find it is a tragedy.

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